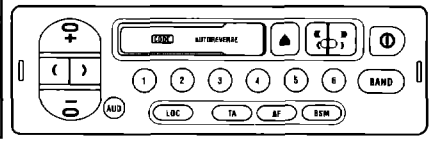
Service Manual

PIONEER®
The Art of Entertainment
RENAULT



ORDER NO.
CRT1884

TUNER DECK AMPLIFIER

KEH-M1066ZRN EW

VEHICLE	DESTINATION	PRODUCED AFTER	RENAULT PART No.	ID No.	PIONEER MODEL No.
ESPACE	EUROPE	January 1997	6025 30 7754	———	KEH-M1066ZRN/EW

- **See the separate manual CX-644(CRT1800) for the cassette mechanism description.**
- **The cassette mechanism assy employed in this model is one of X-2M series.**

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1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING

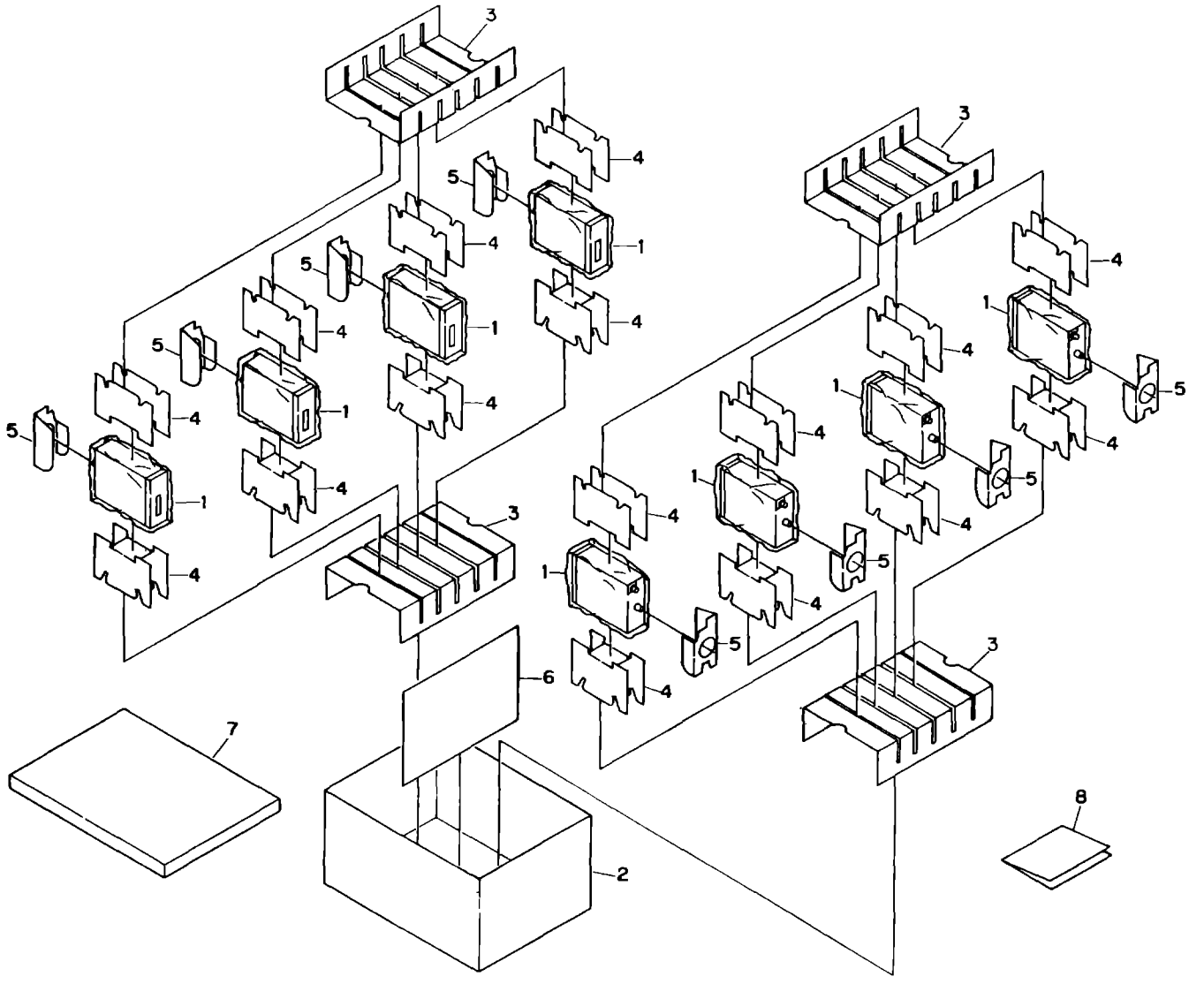


Fig. 1

NOTE:

- Parts marked by " * "are generally unavailable because they are not in our Master Spare Parts List.
- Screws adjacent to ▼ mark on the product are used for disassembly.

● Parts List

Mark No.	Description	Part No.
1	Polyethylene Bag	CEG-162
2	Contain Box	CHL3154
3	Protector	CHP1900
4	Protector	CHP1901
5	Protector	CHP1902
6	Board	CHW1608
7	Lid	CHW1584
8	Owner's Manual (English, French, German, Spanish, Italian, Dutch, Portuguese)	CRD2189

2.2 EXTERIOR

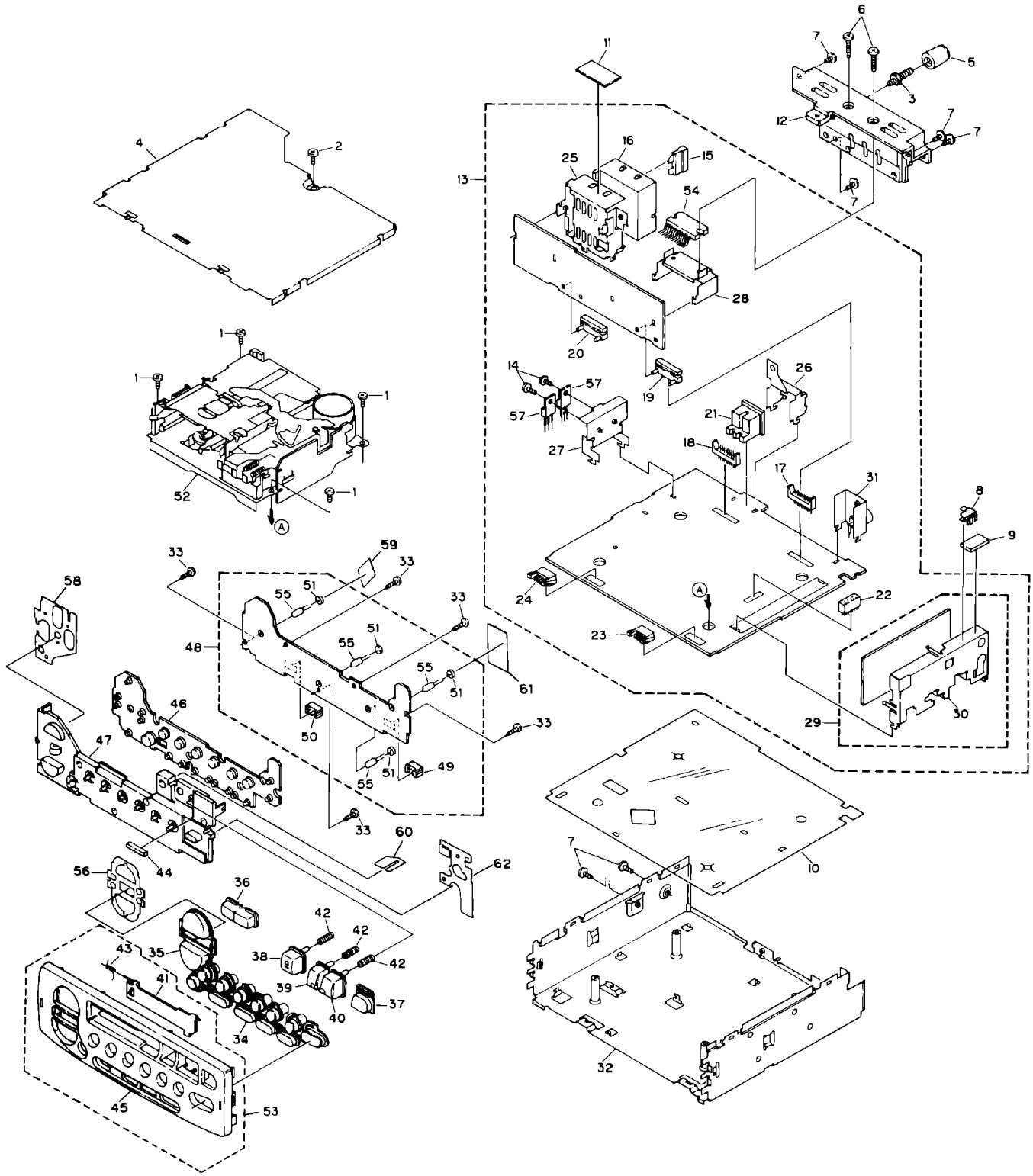


Fig. 2

● Parts List

Mark No.	Description	Part No.
1	Screw	BSZ26P050FMC
2	Screw	BSZ30P060FMC
3	Screw	CBA1002
4	Case	CNB2084
5	Bush	CNV3253
6	Screw	BMZ26P150FMC
7	Screw	BSZ30P060FMC
8	Holder	CNC5704
9	Spacer	CNM3908
10	Insulator	CNM4929
11	Spacer	CNM5270
12	Heat Sink	CNR1429
13	Tuner Amp Unit	CWM4848
14	Screw	BSZ26P080FMC
15	Fuse(10A)	CEK1136
16	Connector(CN301)	CKM1088
17	Connector(CN304)	CKS2518
18	Connector(CN305)	CKS2518
19	Connector(CN302)	CKS2528
20	Connector(CN303)	CKS2528
21	DIN Socket(CN651)	CKS3189
22	Connector(CN101)	CKS3362
23	Plug(CN901)	CKS3533
24	Plug(CN902)	CKS3533
25	Holder	CNC5144
26	Holder	CNC6702
27	Holder	CNC6703
28	Holder	CNC6817
29	FM/AM Tuner Unit	CWE1466
30	Holder	CNC6554

Mark No.	Description	Part No.
31	Holder Unit	CXA9337
32	Chassis Unit	CXA9336
33	Screw	BPZ20P080FMC
34	Button(1-6)	CAC4819
35	Button(+ -)	CAC4820
36	Button(<>)	CAC4821
37	Button(I)	CAC4822
38	Button(EJECT)	CAC4823
39	Button(<)	CAC4824
40	Button(>)	CAC4825
41	Door	CAT1789
42	Spring	CBH1836
43	Spring	CBH1838
44	Cushion	CNM5252
45	Grille	CNS4136
46	Rubber	CNV4687
47	Lighting Conductor	CNV4688
48	Key Board Unit	CWM4849
49	Connector(CN903)	CKS3561
50	Connector(CN904)	CKS3561
51	Bush	CNV-724
52	Cassette Mechanism Assy	EXK3457
53	Grille Unit	CXB1385
54	IC(IC301)	TDA7385
55	Lamp(IL901-904))	CEL1484
56	Cover	CNM5289
57	Transistor(Q804,901)	2SD2395
58	Insulator	CNM5330
59	Insulator	CNM5331
60	Insulator	CNM5332
61	Insulator	CNM5333
62	Insulator	CNM5334

2.3 CASSETTE MECHANISM ASSY

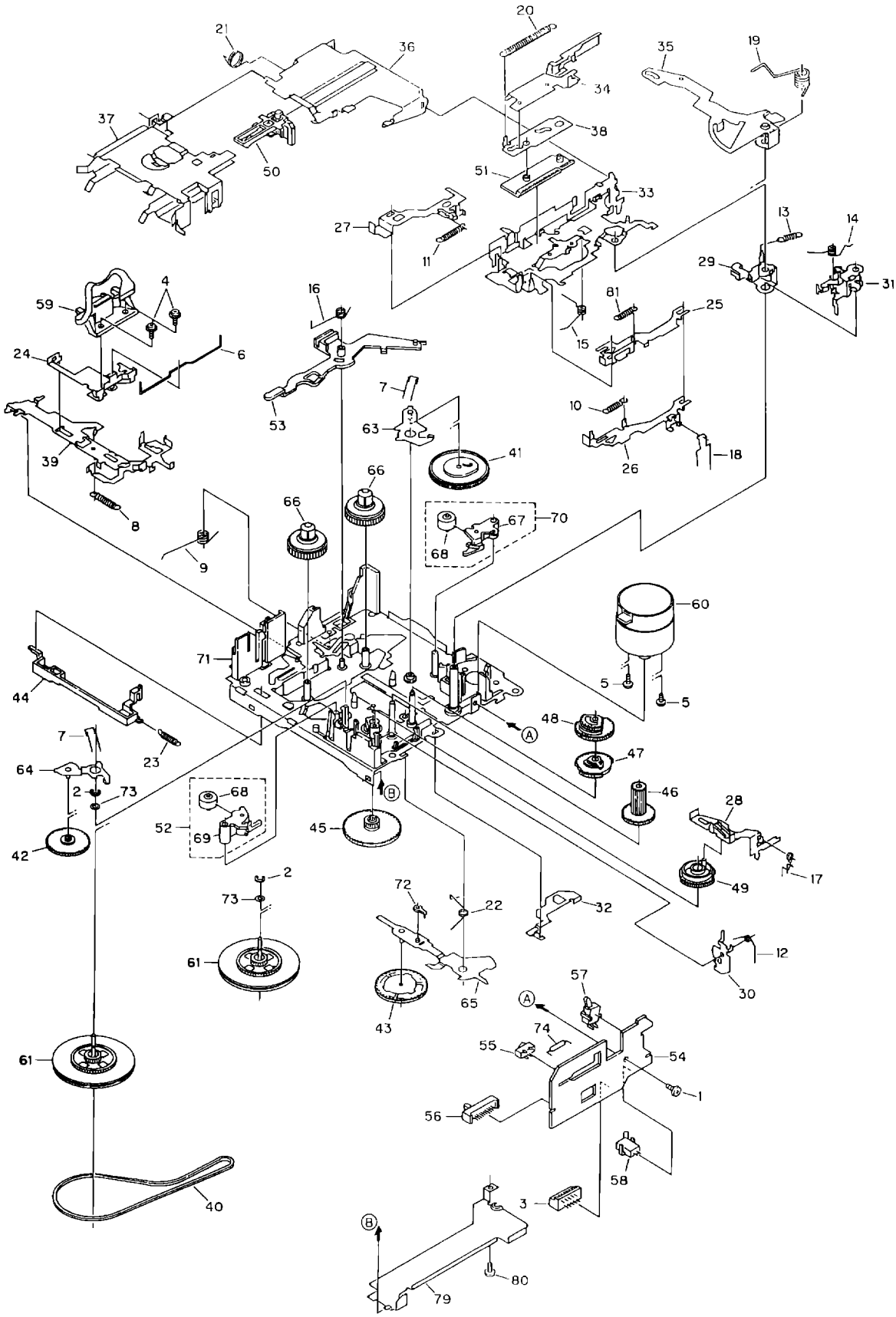


Fig. 3

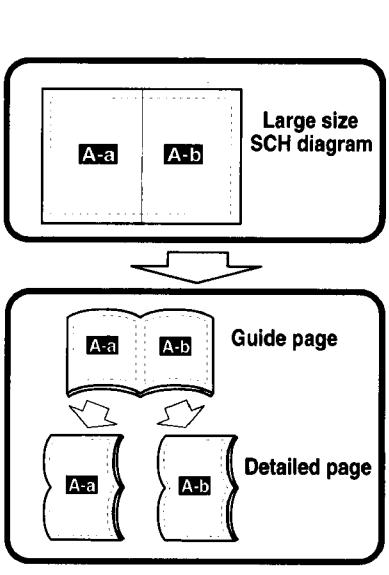
● Parts List

Mark	No.	Description	Part No.
	1	Screw	BSZ23P050FMC
	2	Washer	CBG1003
	3	Connector(CN1)	CKS2829
	4	Screw(M2x5)	EBA1028
	5	Screw(M2x2.5)	EBA1037
	6	Spring	EBH1554
	7	Spring	EBH1555
	8	Spring	EBH1556
	9	Spring	EBH1557
	10	Spring	EBH1591
	11	Spring	EBH1559
	12	Spring	EBH1560
	13	Spring	EBH1561
	14	Spring	EBH1562
	15	Spring	EBH1563
	16	Spring	EBH1590
	17	Spring	EBH1565
	18	Spring	EBH1566
	19	Spring	EBH1567
	20	Spring	EBH1568
	21	Spring	EBH1569
	22	Spring	EBH1571
	23	Spring	EBH1579
	24	Head Base	ENC1457
	25	Lever	ENC1429
	26	Lever	ENC1430
	27	Lever	ENC1431
	28	Lever	ENC1432
	29	Arm	ENC1433
	30	Arm	ENC1434
	31	Arm	ENC1480
	32	Arm	ENC1476
	33	Bracket	ENC1437
	34	Lever	ENC1438
	35	Arm	ENC1439
	36	Frame	ENC1440
	37	Holder	ENC1441
	38	Lever	ENC1446
	39	Lever	ENC1478
	40	Belt	ENT1027
	41	Gear	ENV1504
	42	Gear	ENV1470
	43	Gear	ENV1471
	44	Lever	ENV1472
	45	Gear	ENV1474
	46	Gear	ENV1475
	47	Gear	ENV1512
	48	Gear	ENV1513
	49	Gear	ENV1502
	50	Lever	ENV1480
	51	Lever	ENV1487
	52	Pinch Holder Unit	EXA1483
	53	Arm	ENV1489
*	54	P.C.Board	ENP1161
	55	Switch(Eject)(S4)	ESG1006
	56	Switch(FWD)(REV)(S3)	ESH1006
	57	Switch(Load)(S1)	ESN1016
	58	Switch(Mute)(S2)	ESN1017
	59	Head Assy(HD1)	EXA1466
	60	Motor Unit(M1)	EXA1467
	61	Flywheel Unit	EXA1468
	62	•••••	
	63	Arm Unit	EXA1447
	64	Arm Unit	EXA1448
	65	Arm Unit	EXA1449
	66	Reel Unit	EXA1450
	67	Pinch Holder	ENV1466
	68	Pinch Roller	ENV1501
	69	Pinch Holder	ENV1467
	70	Pinch Holder Unit	EXA1482
	71	Chassis Unit	EXA1465
	72	Service Arm	EXX1048
	73	Washer	HBF-179
	74	Resistor(R1)	RD1/4HM472J
	75-78	•••••	
	79	Cover	ENC1452
	80	Screw	BSZ23P050FMC
	81	Spring	EBH1592

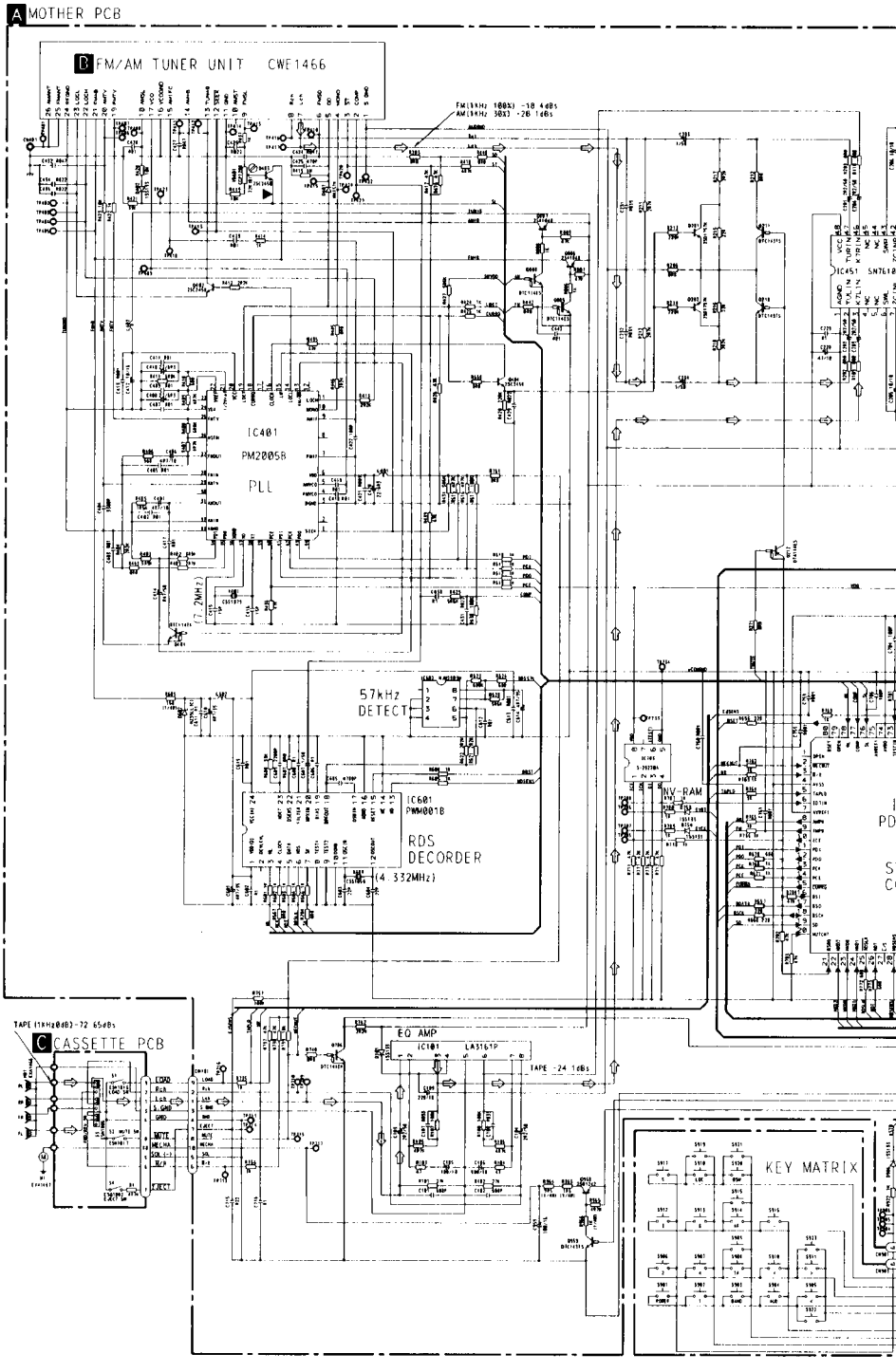
3. SCHEMATIC DIAGRAM

3.1 TUNER AMP UNIT, KEY BOARD UNIT AND CASSETTE PCB(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".



A-a



A-b

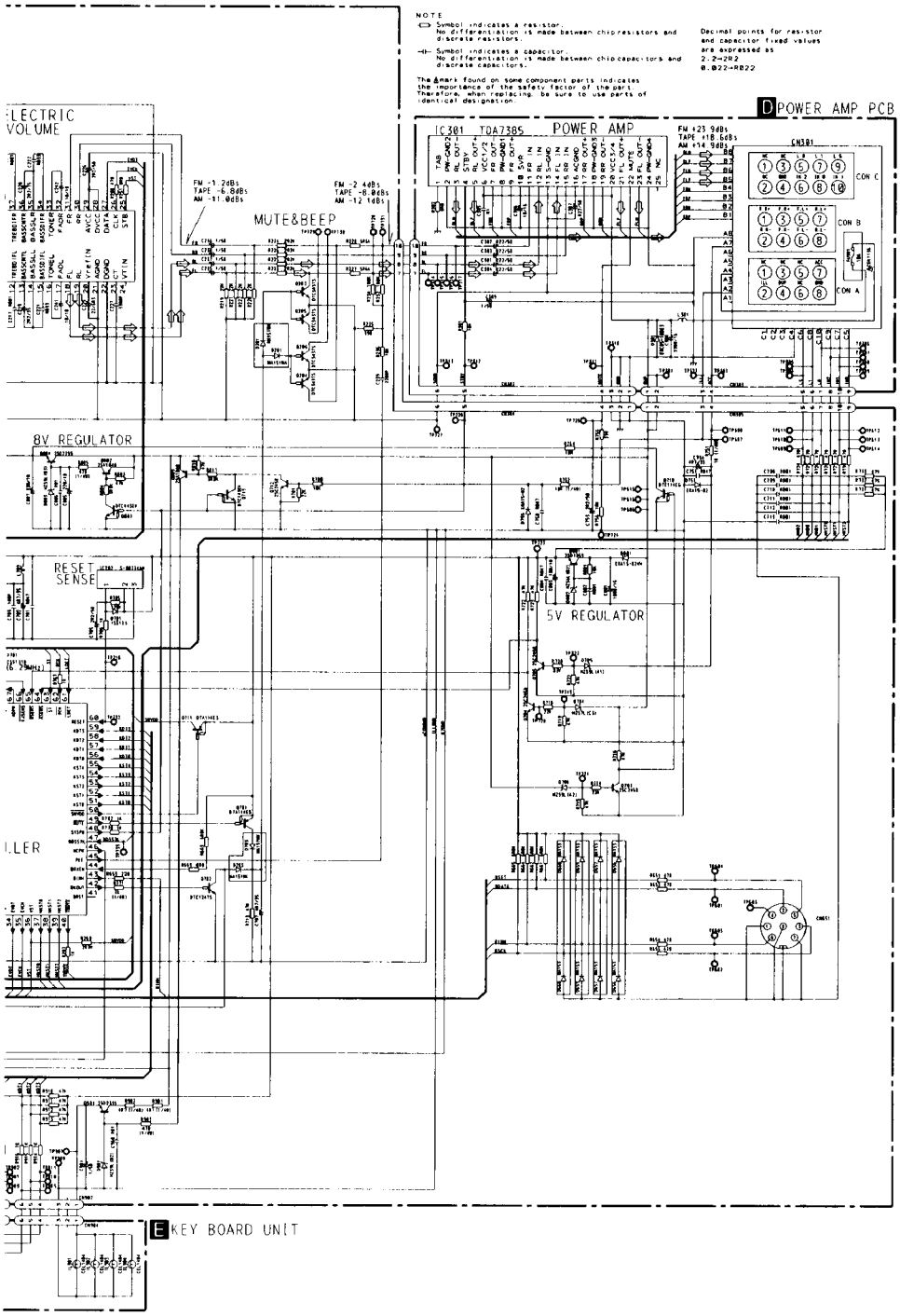
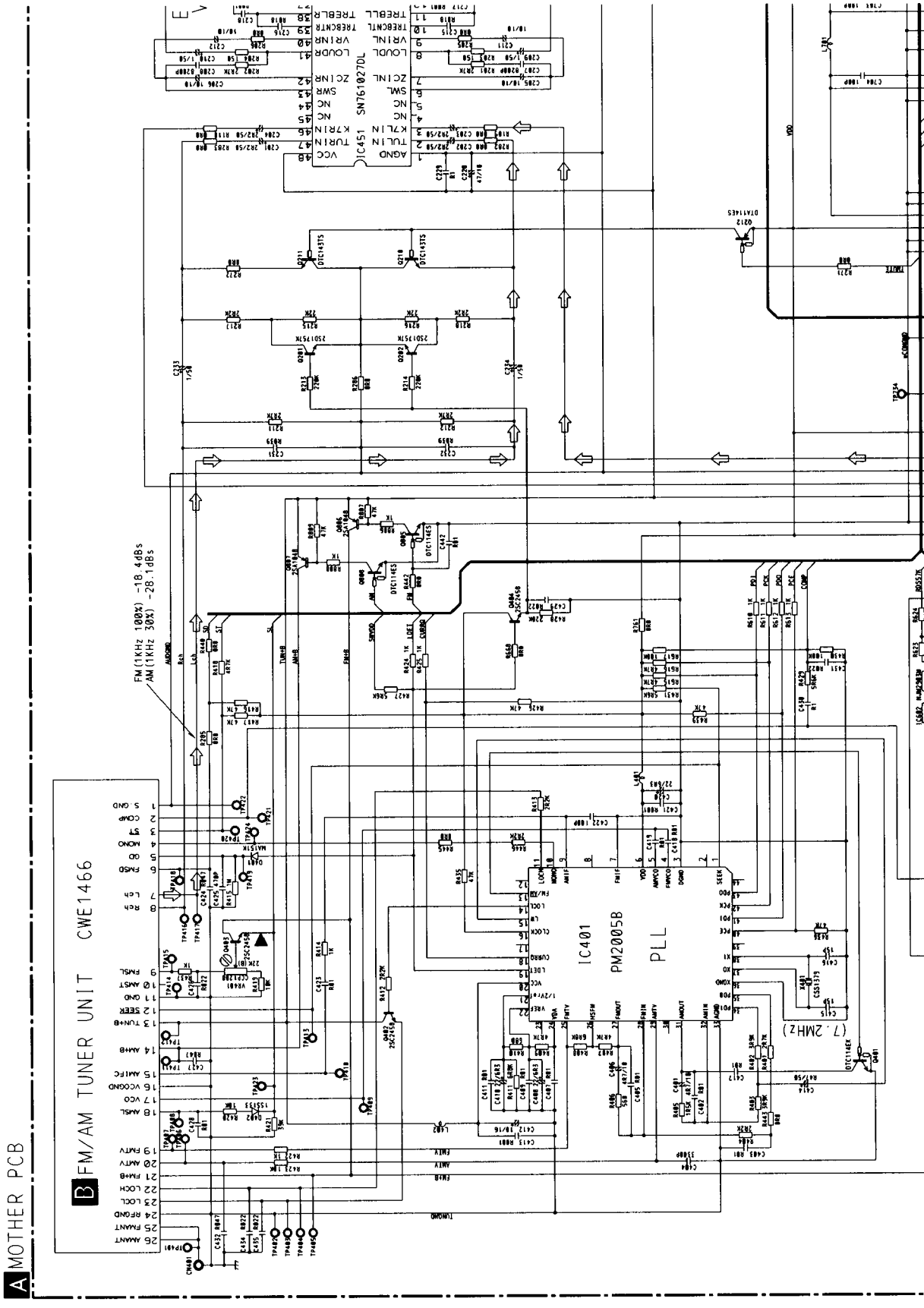

NOTE
Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.
Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.
The Δmark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
Decimal points for resistor and capacitor fixed values are expressed as
2.2→2R2
0.022→R022
D POWER AMP PCB
IC301 TDA7385 POWER AMP
CN301
CON C
CON B
CON A
MUTE&BEEP
8V REGULATOR
RESET SENSE
5V REGULATOR
E KEY BOARD UNIT

Fig. 4

A-b


A MOTHER PCB
B FM/AM TUNER UNIT CWE1466
IC401 PM2005B PLL
IC451 SN761027DL
(7.2MHz)
FM(1KHz 100%) -18.4dBs
AM(1KHz 30%) -28.1dBs

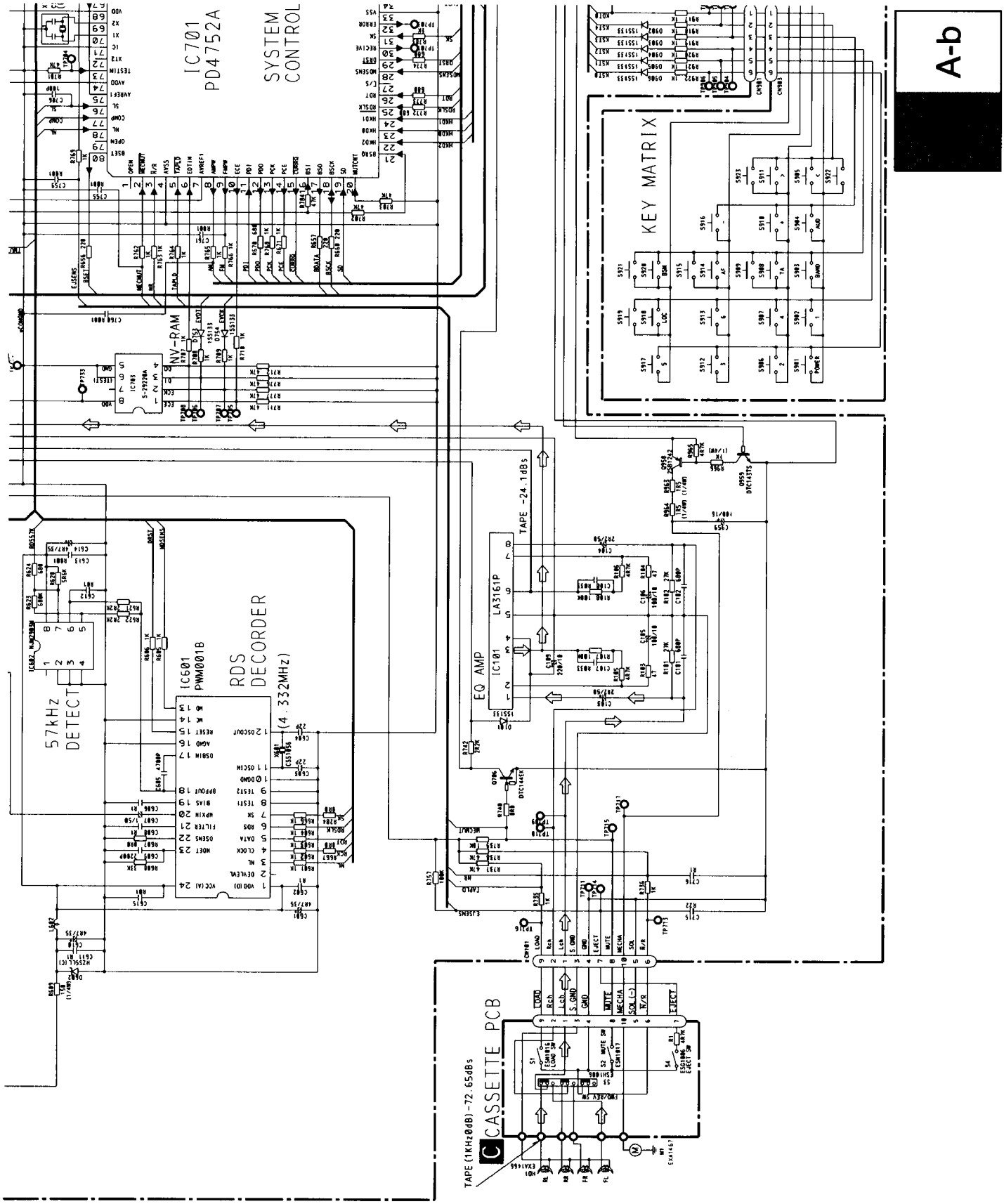
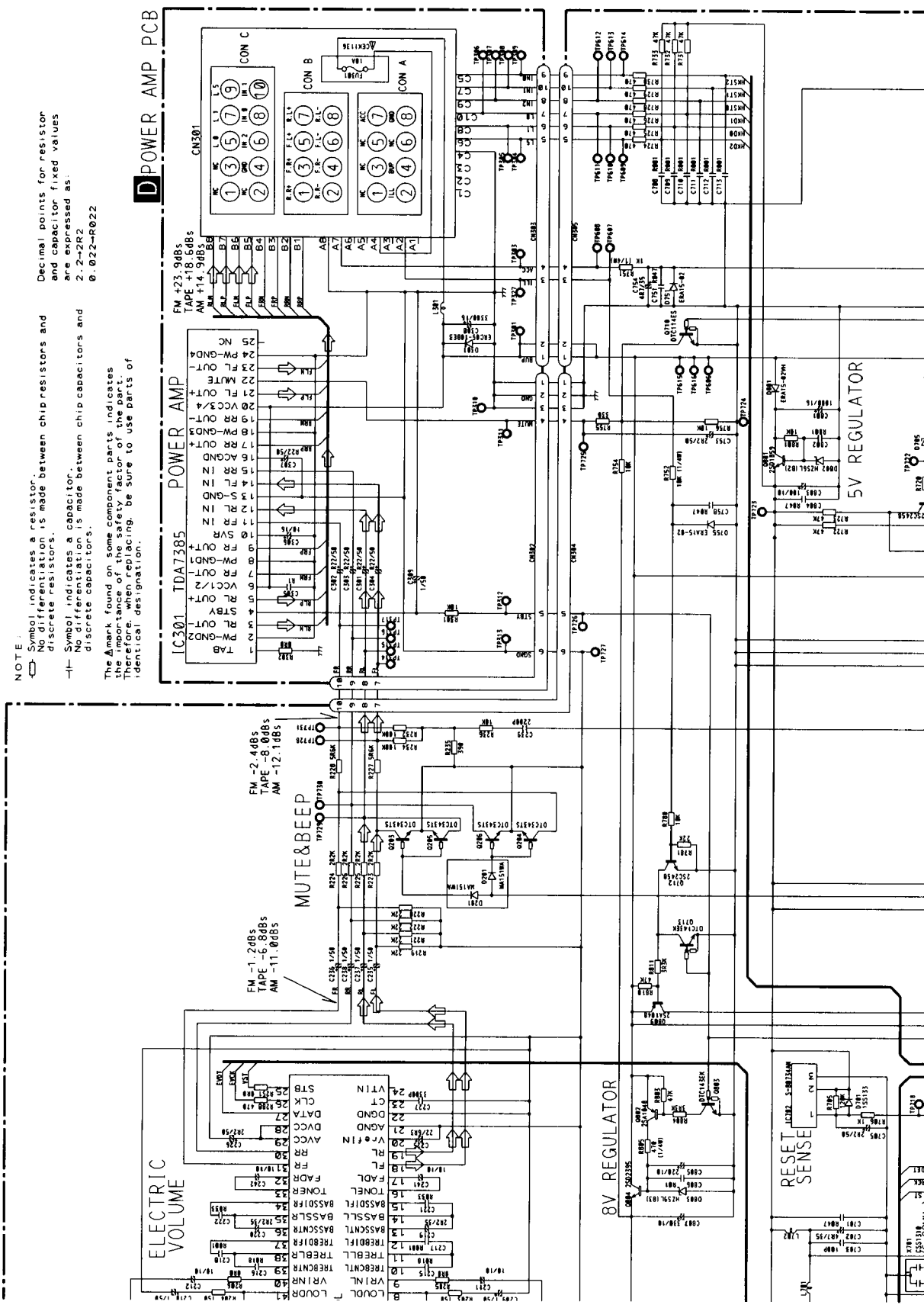

IC701
PD4752A
SYSTEM
CONTROL
KEY MATRIX
NV-RAM
EQ AMP
IC101
LA3161P
TAPE -24.1dBs
RDS
DECORDER
IC601
PWM001B
(4.332MHz)
57kHz
DETECT
CASSETTE PCB
TAPE (1KHz40dB) -72.65dBs
LOAD
Rch
Lch
S.GND
GND
EJECT
MUTE
MECHA
SOL (-)
R/R
A-b
A-a
11

Fig. 5

A-a


POWER AMP PCB
POWER AMP
IC301 TDA7385
CN301
CON C
CON B
CON A
FM +23.9dBs
TAPE +18.6dBs
AM +14.9dBs
FM -2.4dBs
TAPE -8.0dBs
AM -12.1dBs
MUTE&BEEP
FM -1.2dBs
TAPE -6.8dBs
AM -11.0dBs
ELECTRIC VOLUME
8V REGULATOR
5V REGULATOR
RESET SENSE
NOTE:
Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.
Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.
The ▲mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

A-b

A-a

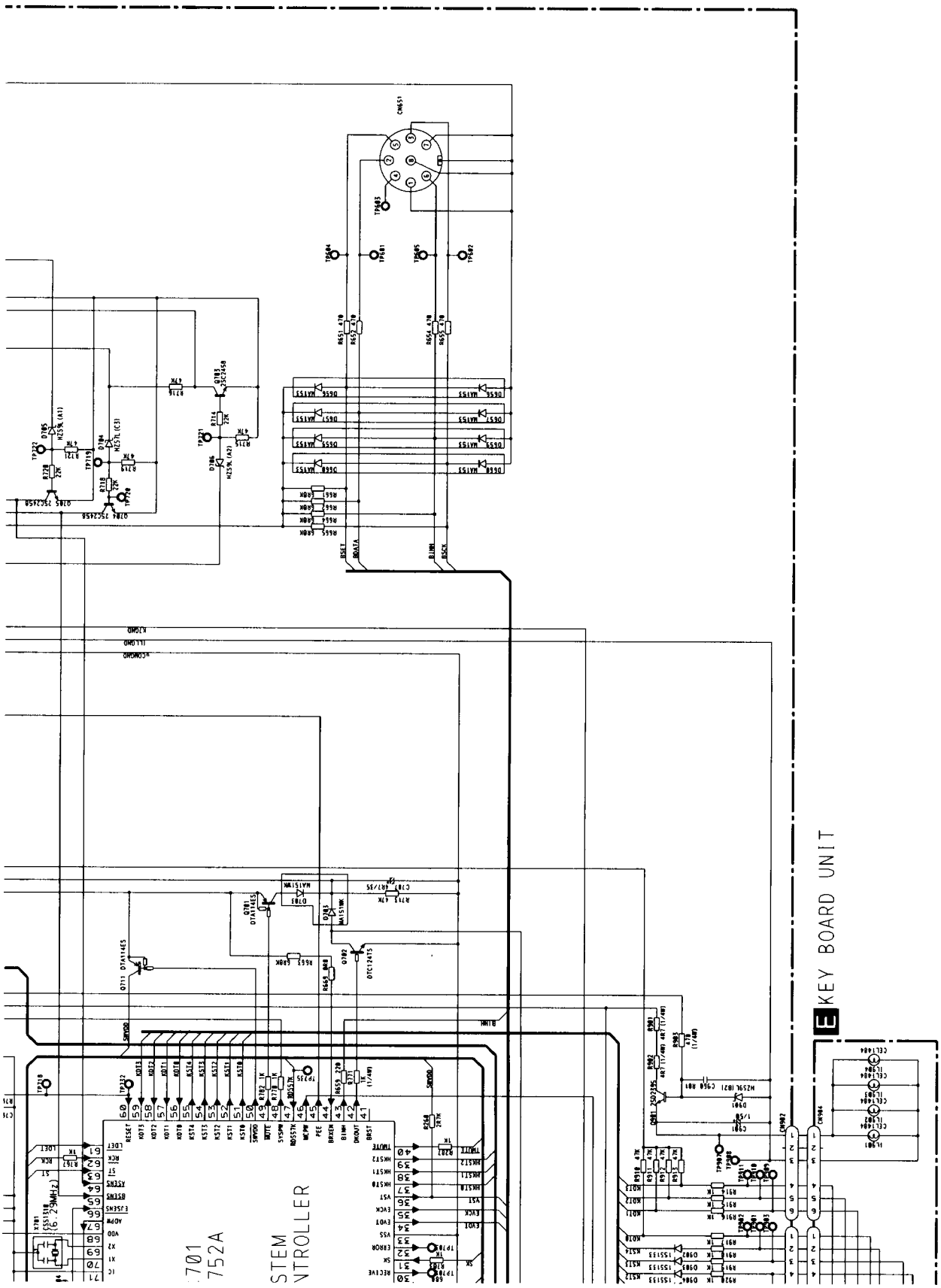
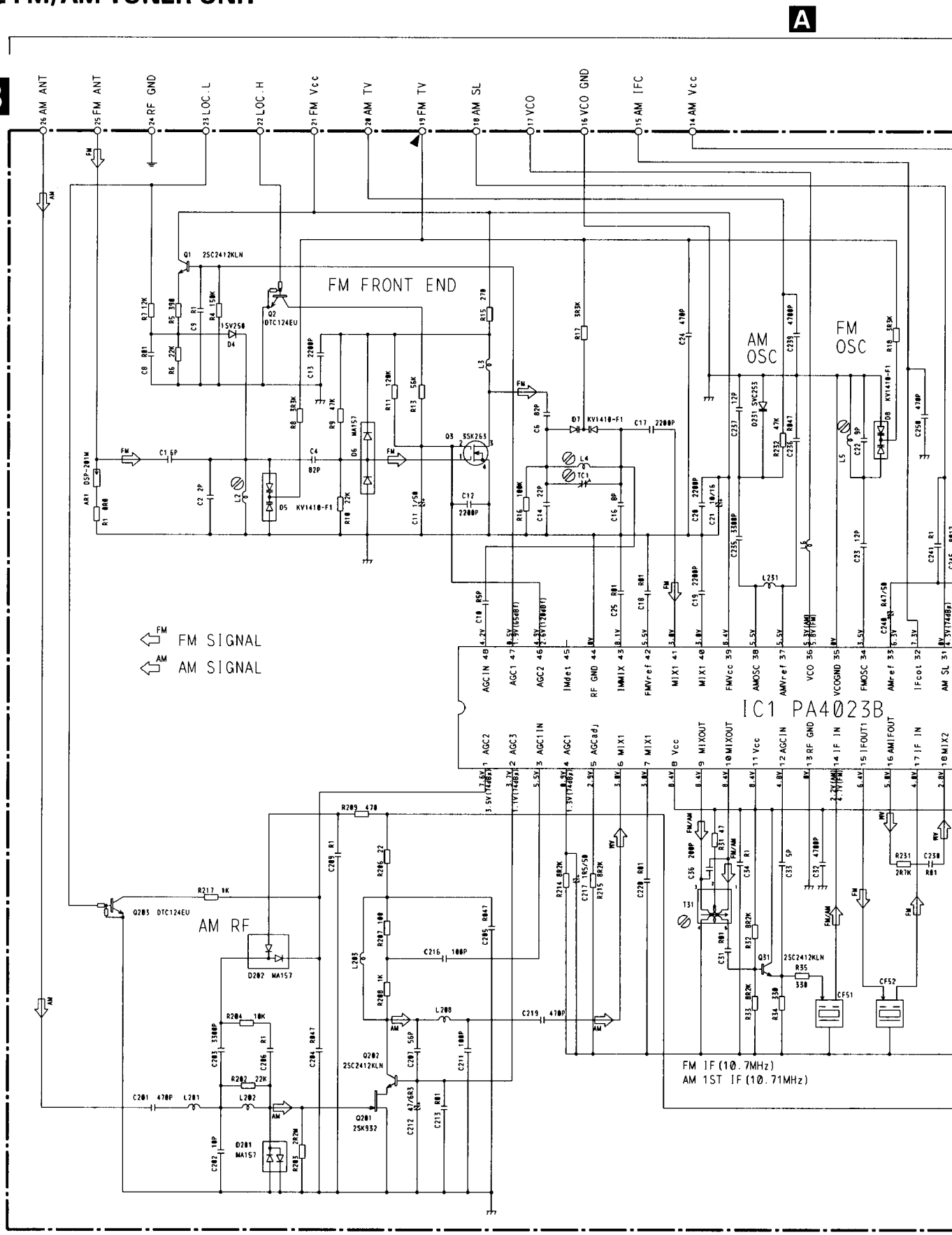


Fig. 6

3.2 FM/AM TUNER UNIT



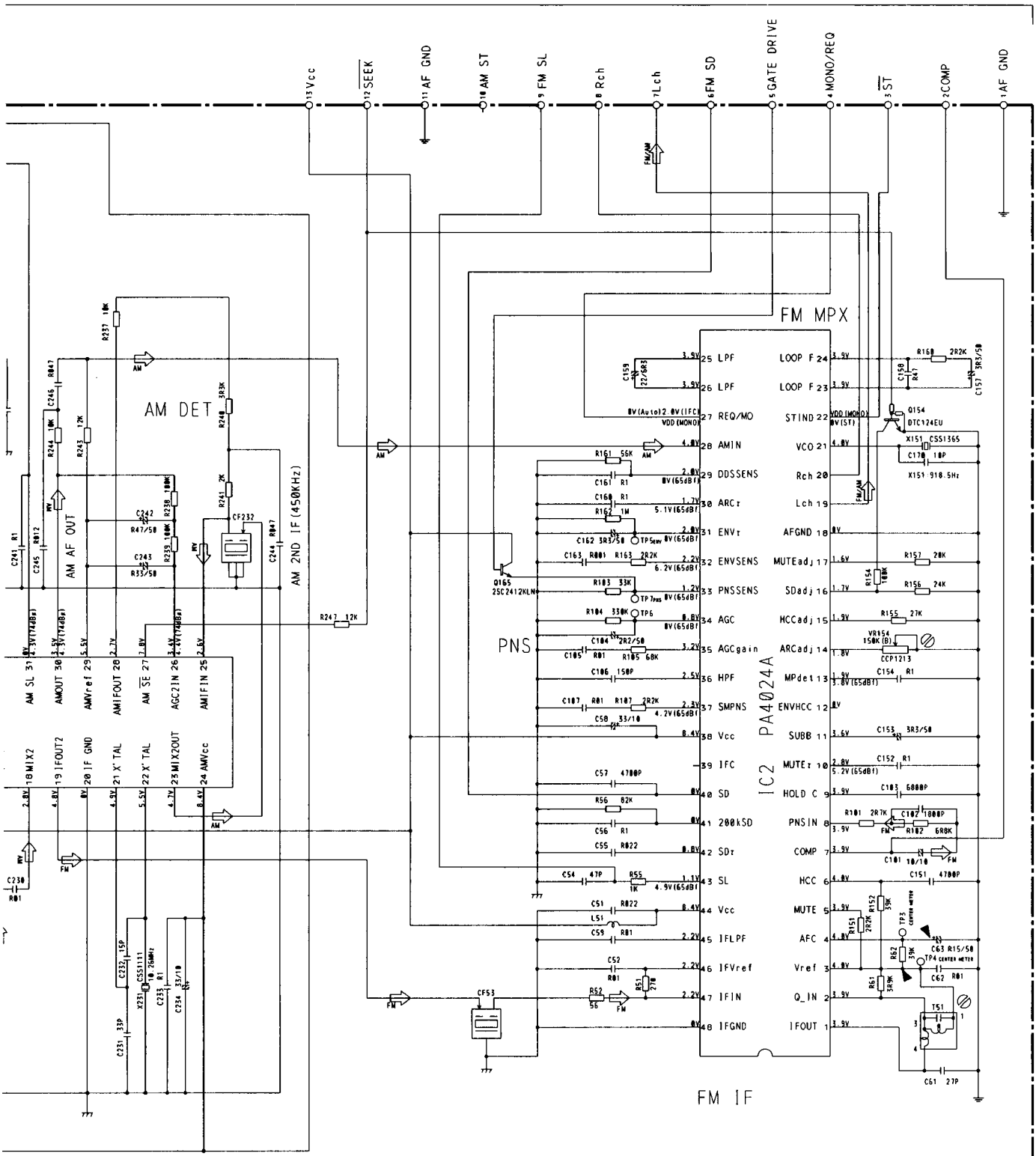
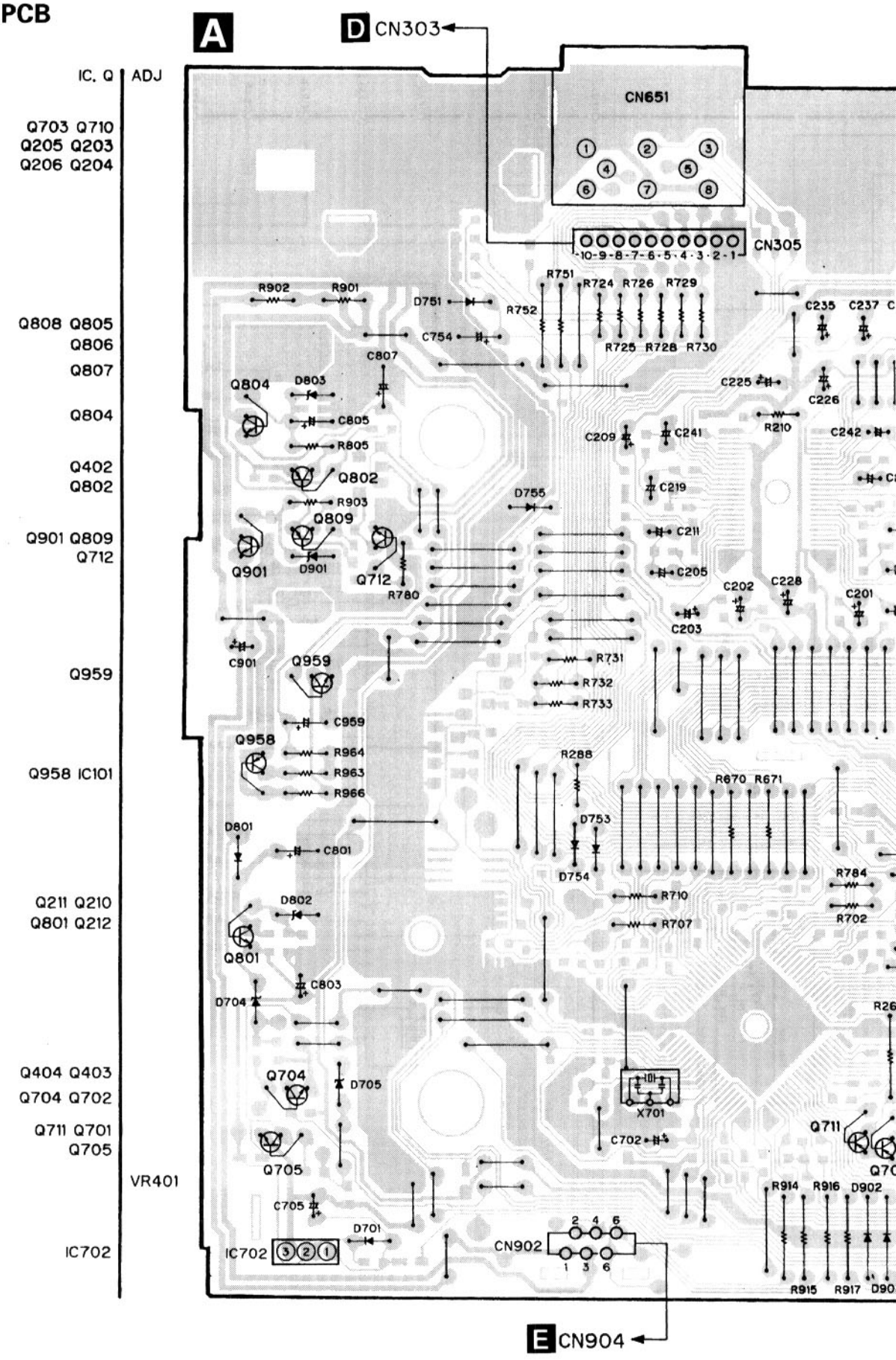

13 Vcc
12 SEEK
11 AF GND
10 AM ST
9 FM SL
8 Rch
7 Lch
6 FM SD
5 GATE DRIVE
4 MONO/REQ
3 ST
2 COMP
1 AF GND
FM MPX
AM DET
AM AF OUT
AM 2ND IF (450KHz)
PNS
IC2 PA4024A
FM IF
LOOP F
STIND
VCO
Rch
Lch
AFGND
MUTEadj
SDadj
HCCadj
ARCadj
MPdet
ENVHCC
SUBB
MUTEr
HOLD C
PNSIN
COMP
HCC
MUTE
AFC
Vref
Q_IN
IFOUT
LPF
REQ/MO
AMIN
DDSSENS
ARCr
ENVr
ENVSENS
PNSSENS
AGC
AGCgain
HPF
SMPNS
Vcc
IFC
SD
200kSD
SDr
SL
Vcc
IFLPF
IFVref
IFIN
IFGND
AM SL
AMOUT
AMVref
AMIFOUT
AM SE
AGC2IN
AMIFIN
MIX2
IFOUT2
IF GND
X'TAL
X'TAL
MIXZOUT
AMVcc

Fig. 7

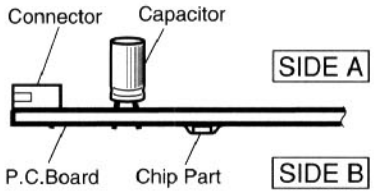
4. PCB CONNECTION DIAGRAM

4.1 MOTHER PCB



NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams



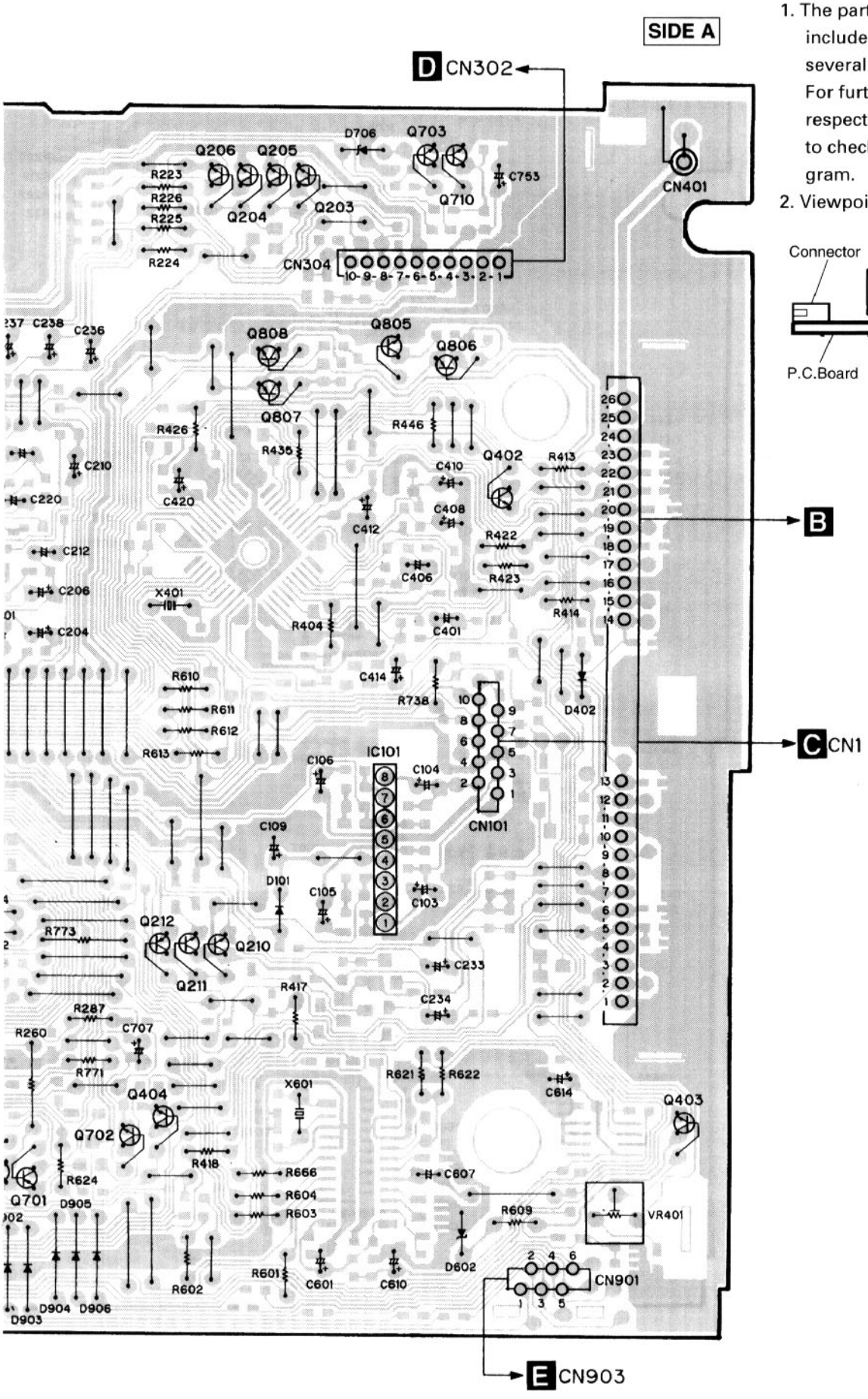
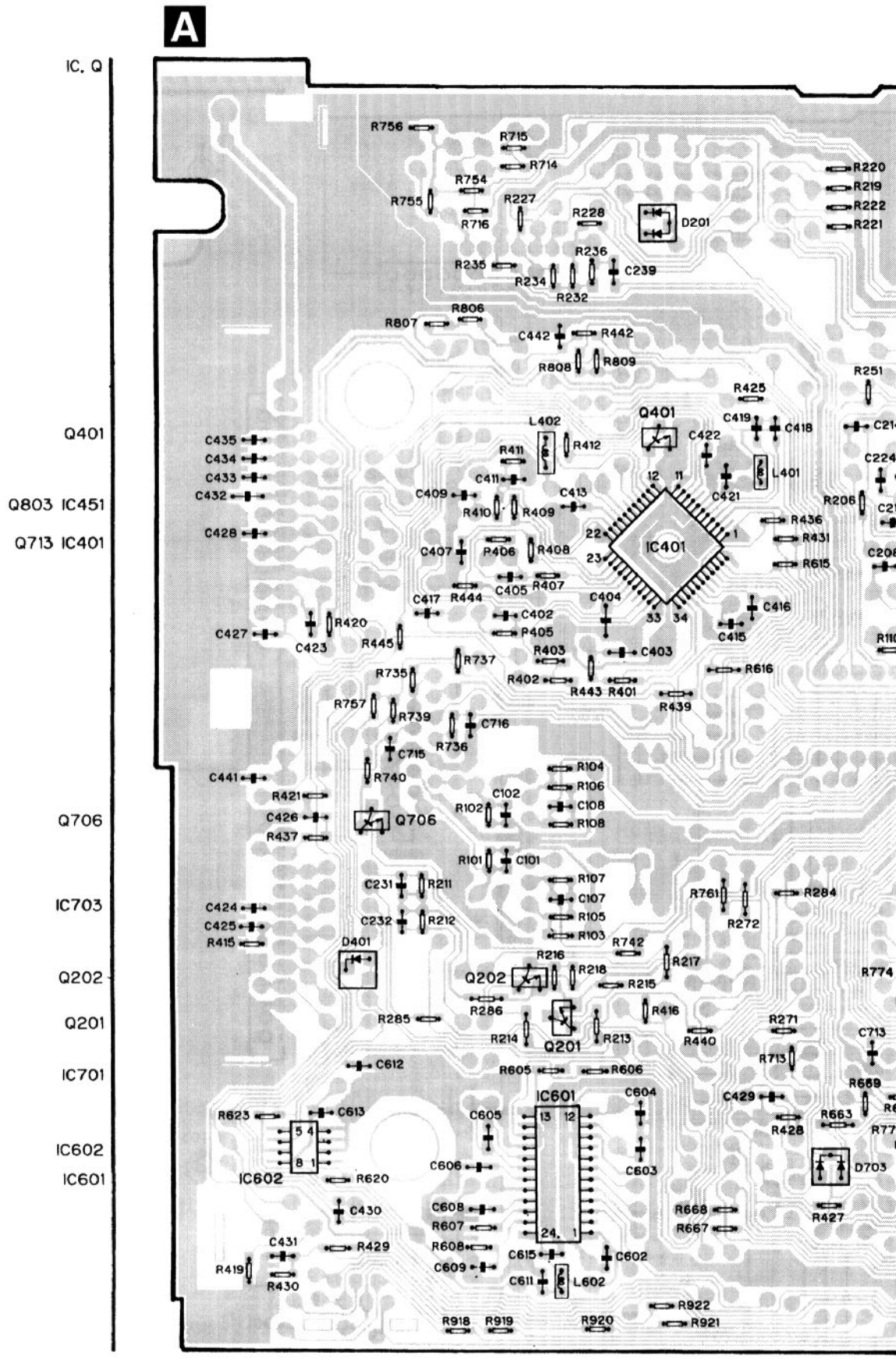


Fig. 8


A
IC. Q
Q401
Q803 IC451
Q713 IC401
Q706
IC703
Q202
Q201
IC701
IC602
IC601
R756
R715
R714
R754
R755
R716
R227
R228
D201
R220
R219
R222
R221
R235
R234
R236
C239
R232
R806
R807
C442
R442
R808
R809
R251
R425
Q401
L402
C419
C418
C435
C434
C433
C432
R411
R412
C422
L401
C411
C409
C413
C421
R206
R410
R409
R436
C428
C407
R406
R408
IC401
R431
R615
C405
R407
C417
R444
C404
C416
C427
R420
C423
C402
C415
R445
R405
R403
C403
R737
R616
R735
R402
R443
R401
R439
R757
R739
C716
R736
C715
R740
C441
R104
R421
C102
R106
C426
R102
C108
Q706
R437
R108
R101
C101
R107
C231
R211
R761
R284
C107
C424
C232
R212
R105
R272
C425
R103
R415
D401
R742
R216
R217
R774
Q202
R218
R215
R286
R285
R416
R271
R214
Q201
R213
R440
C713
R713
C612
R605
R606
IC601
C604
R669
C429
R623
C613
C605
R663
R428
R77
IC602
R620
C606
C603
D703
C430
R668
R667
R427
C608
R607
R608
C615
C602
C431
R429
R419
C609
C611
L602
R430
R922
R918
R919
R920
R921

SIDE B

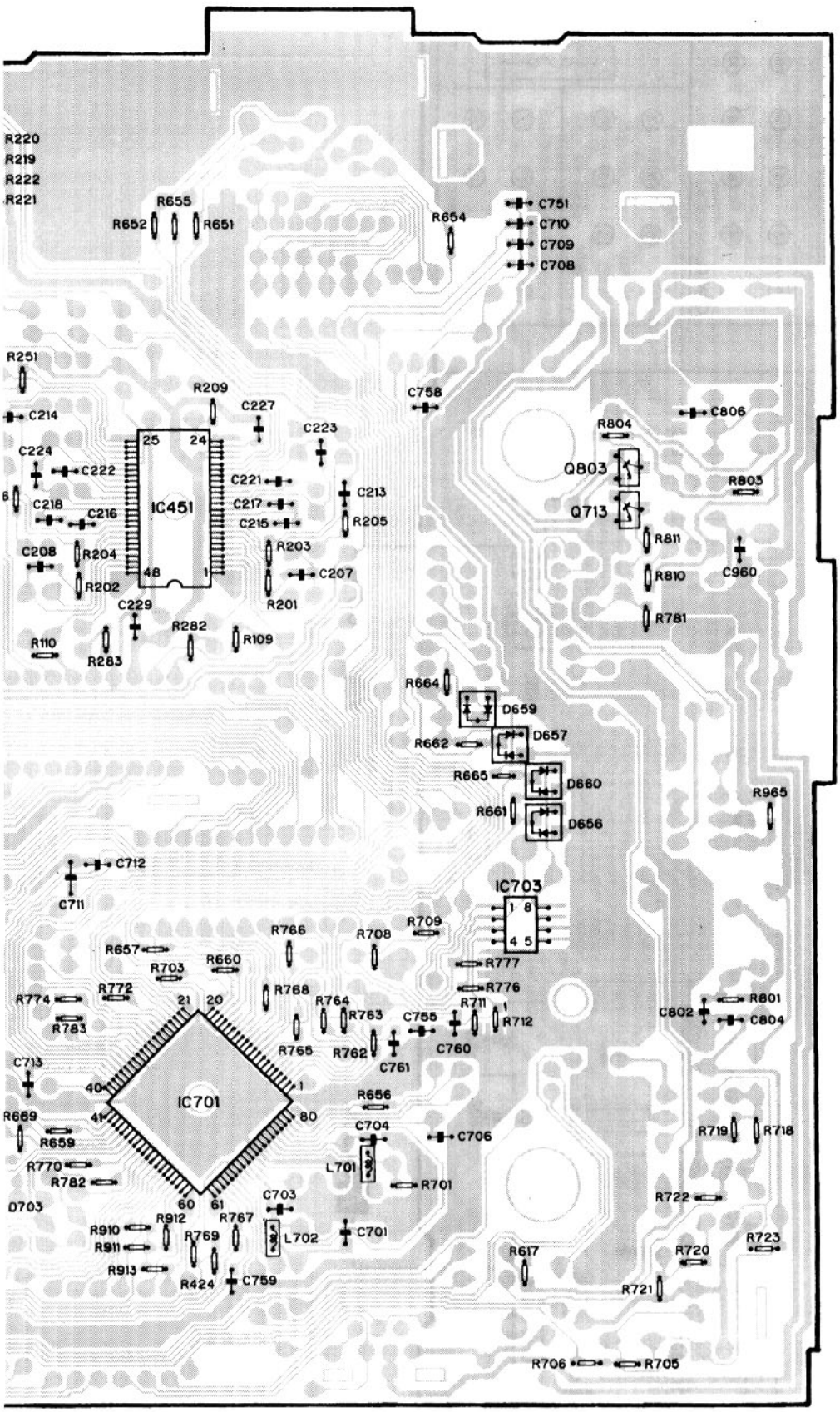

R220
R219
R222
R221
R655
R652
R651
R654
C751
C710
C709
C708
R251
C214
R209
C227
C223
C758
C806
R804
C224
C222
C221
C213
Q803
R803
C218
C216
C217
C205
Q713
R811
C208
R204
R203
C960
R202
C207
R810
C229
R201
R781
R282
R110
R283
R109
R664
D659
R662
D657
R665
D660
R661
D656
R965
C712
C711
IC703
R766
R708
R709
R657
R703
R660
R777
R774
R772
R768
R776
R764
R763
R711
R712
R783
R765
R762
C755
C760
C761
R801
C802
C804
C713
IC701
R656
R669
R659
C704
C706
R719
R718
R770
R782
L701
R701
D703
R722
C703
R910
R912
R767
L702
C701
R911
R769
R723
R913
R424
C759
R617
R720
R721
R706
R705

Fig. 9

4.2 POWER AMP PCB

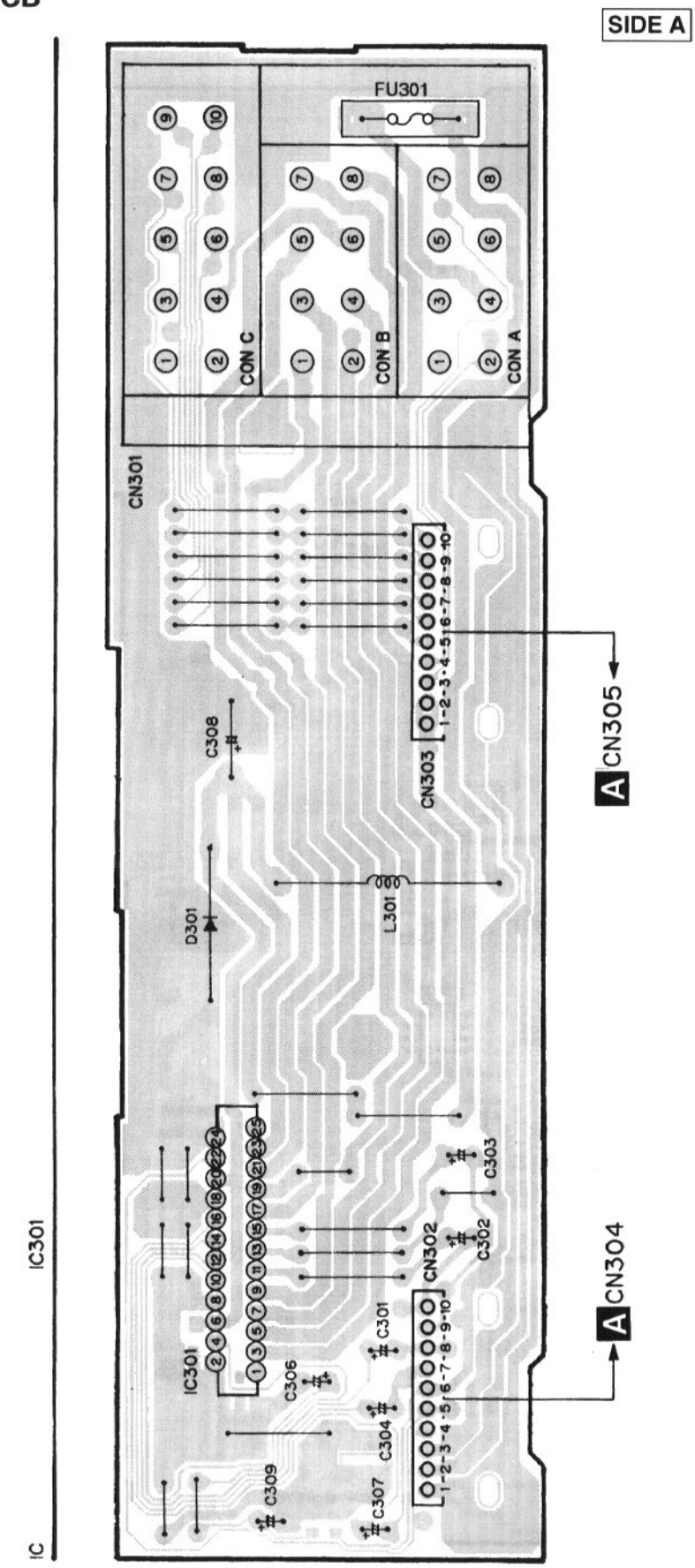
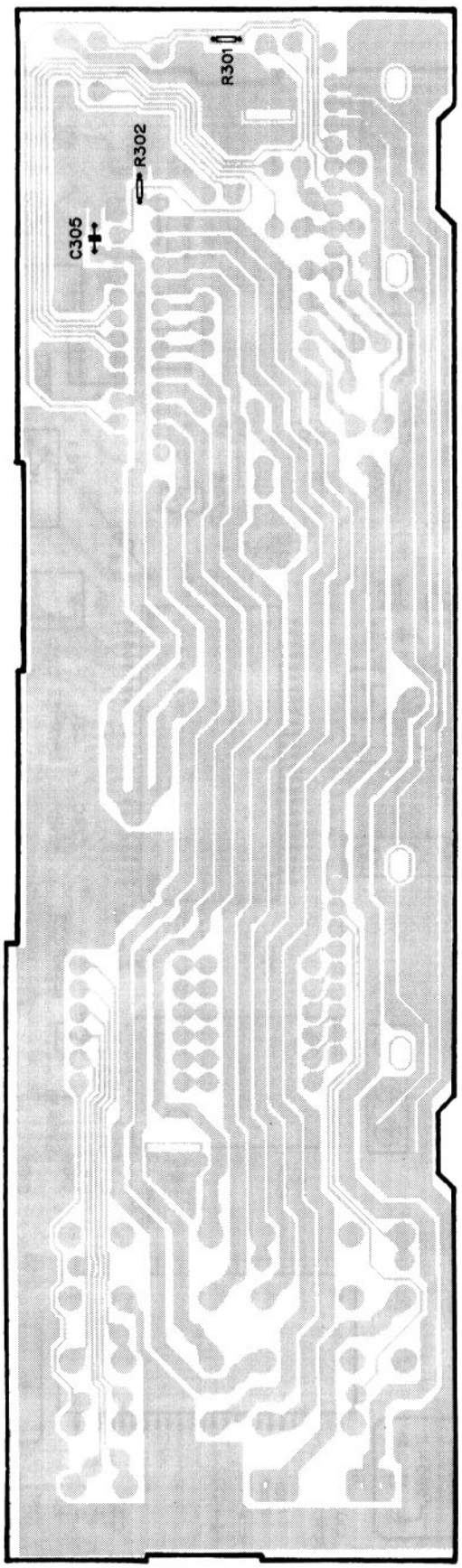


Fig. 10

SIDE B



D

Fig. 11

4.3 FM/AM TUNER UNIT

SIDE A

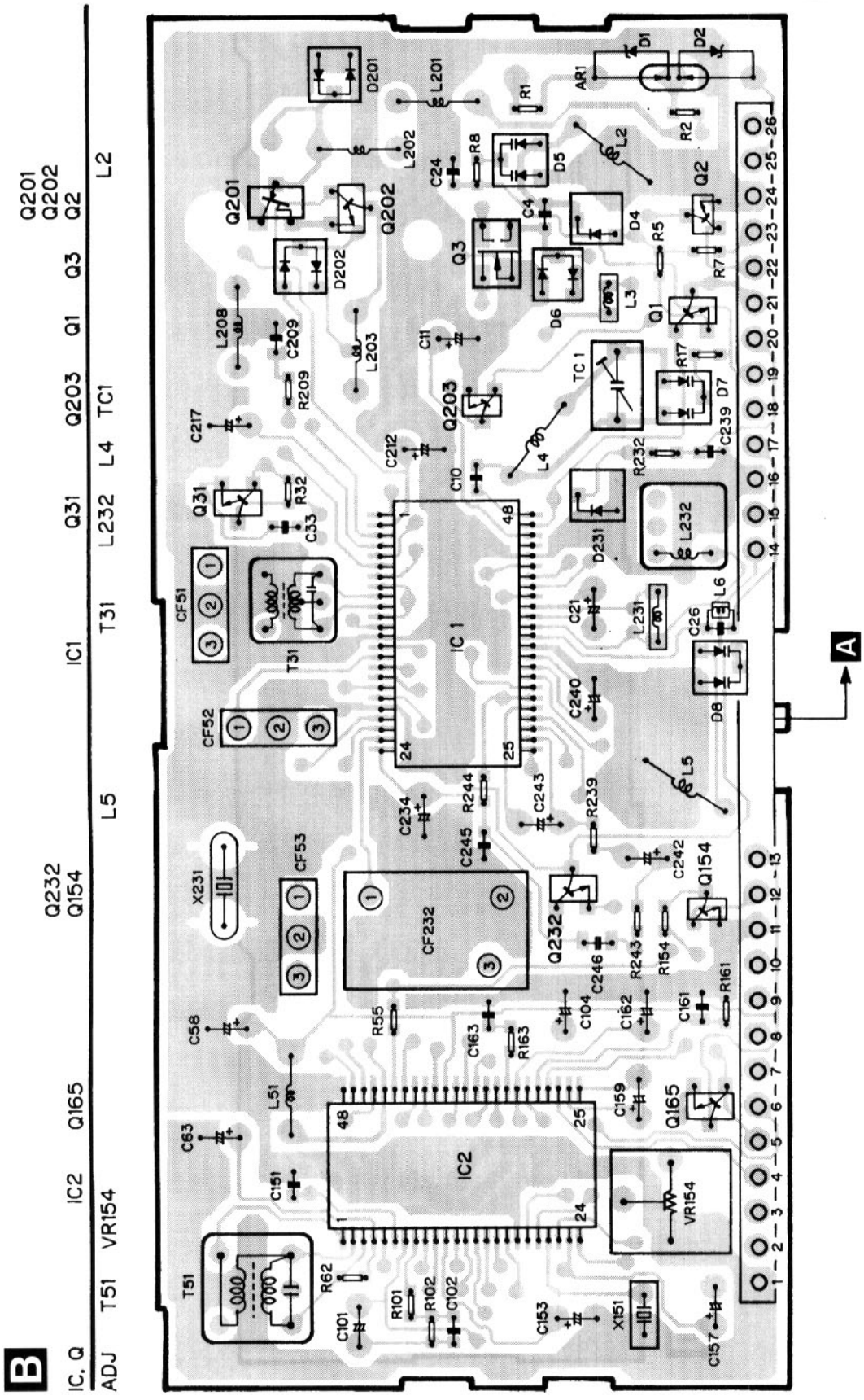


Fig. 12

SIDE B

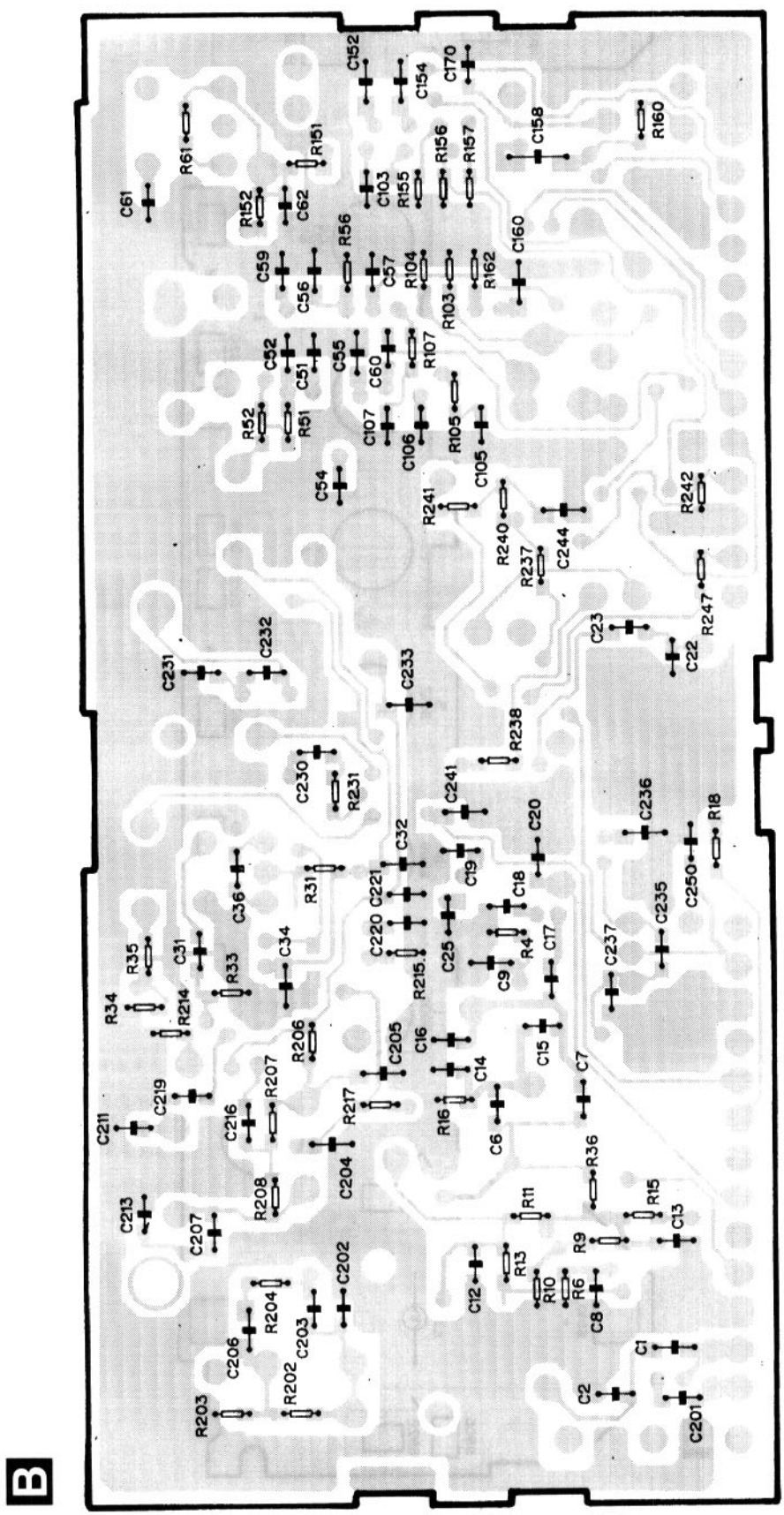

B
C61
R61
C152
C154
C170
R151
C62
R152
C103
R155
R156
R157
C158
R160
C59
C56
R56
C57
R104
R103
R162
C160
C52
C51
C55
C60
R107
R52
R51
C107
C106
R105
C105
C54
R241
R240
R242
C244
R237
R247
C23
C22
C231
C232
C233
C230
R231
R238
C241
C236
R18
C250
C235
C237
C32
C221
C220
C25
R215
C19
C18
C20
C9
R4
C17
C15
C7
C16
C14
C6
R36
R16
R217
C205
R206
C34
R31
C36
R33
C31
R214
R35
R34
C219
R207
C216
C211
C213
C207
R208
C204
R11
R15
C13
R9
C12
R13
R10
R6
C8
C202
R204
C206
C203
R202
R203
C1
C2
C201

Fig. 13

4.4 KEY BOARD UNIT

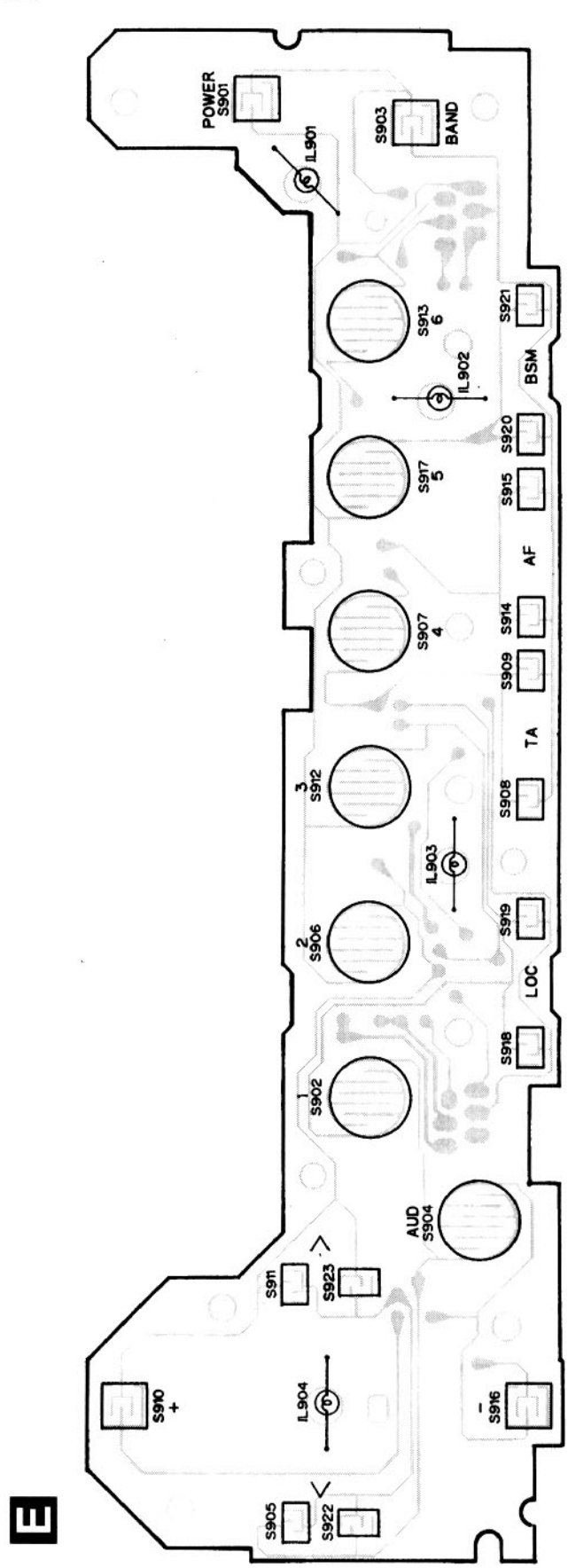


Fig. 14

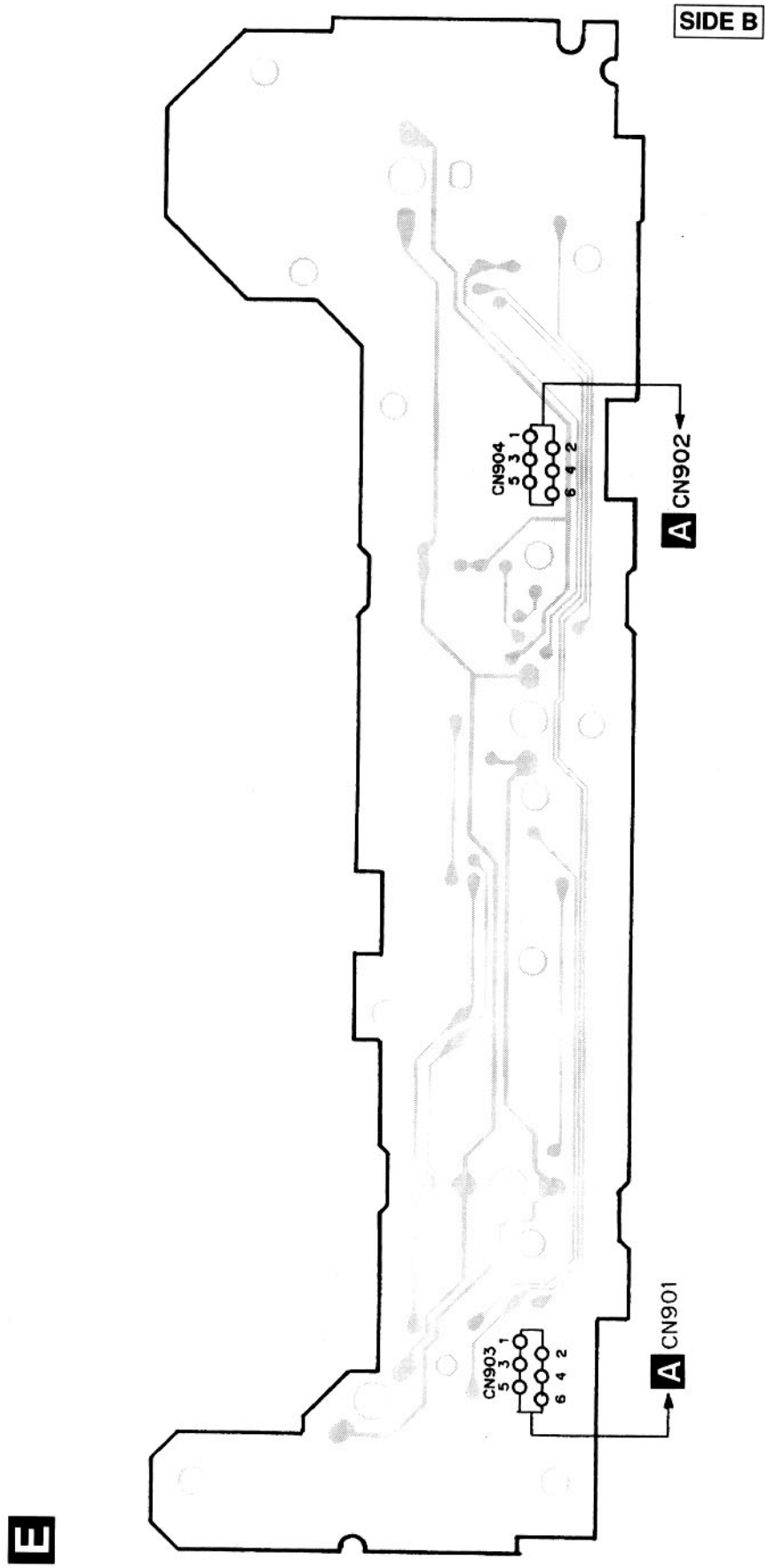


Fig. 15

4.5 CASSETTE PCB

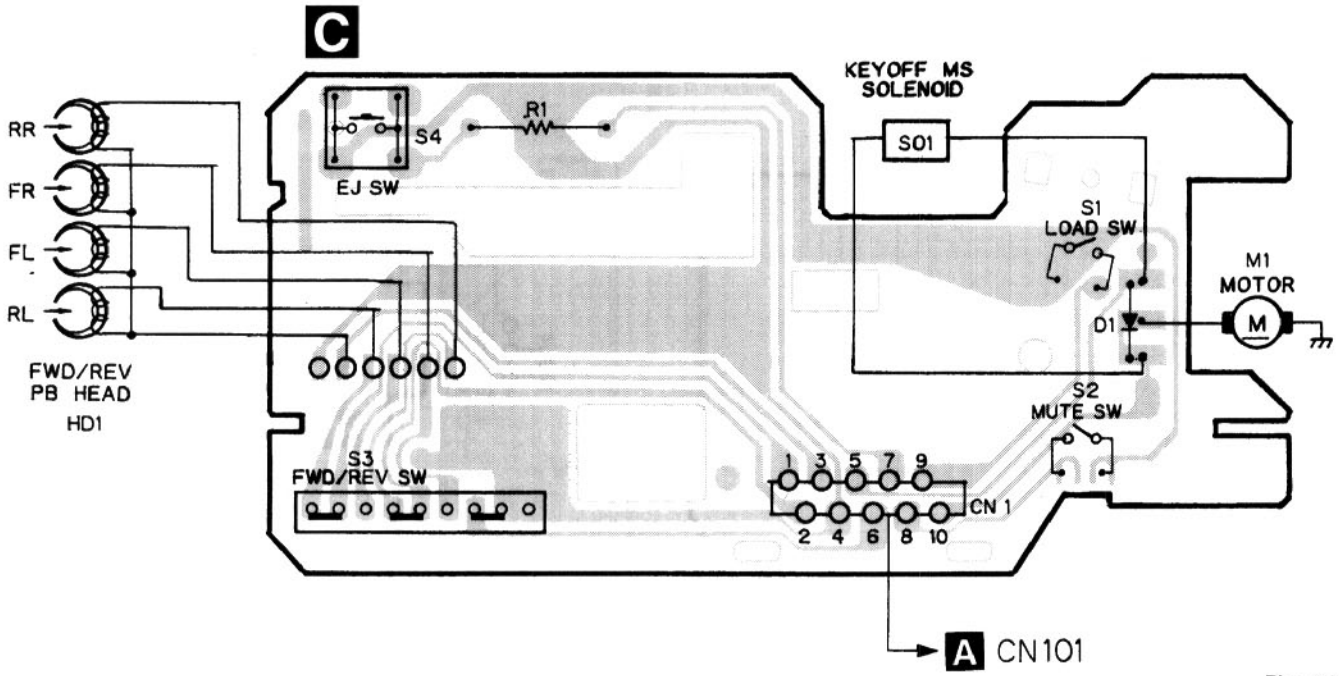


Fig. 16

5. ELECTRICAL PARTS LIST

NOTES:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

=====Circuit Symbol & No.===		Part Name	Part No.
B		Unit Number : CWE1466	
		Unit Name : FM/AM Tuner Unit	
MISCELLANEOUS			
IC	1	IC	PA4023B
IC	2	IC	PA4024A
Q	1	Transistor	2SC2412KLN
Q	2	Transistor	DTC124EU
Q	3	FET	3SK263
Q	31	Transistor	2SC2412KLN
Q	154	Transistor	DTC124EU
Q	165	Transistor	2SC2412KLN
Q	201	FET	2SK932
Q	202	Transistor	2SC2412KLN
Q	203	Transistor	DTC124EU
D	4	Diode	1SV250
D	5	Diode	KV1410-F1
D	6	Diode	MA157
D	7	Diode	KV1410-F1
D	8	Diode	KV1410-F1
D	201	Diode	MA157
D	202	Diode	MA157
D	231	Diode	SVC253
L	2	Coil	CTC1133
L	3	Inductor	LCTB2R2K2125
L	4	Coil	CTC1133
L	5	Coil	CTC1132
L	6	Inductor	LCTBR15K1608
L	51	Ferri-Inductor	LAU150K
L	201	Ferri-Inductor	LAU4R7K
L	202	Ferri-Inductor	LAU330K
L	203	Inductor	CTF1287
L	208	Inductor	LAU121K
L	231	Inductor	LCTA3R3J3225
T	31	Coil	CTE1116
T	51	Coil	CTC1136
TC	1	Capacitor	CCL1038
CF	51	Ceramic Filter	CTF1292
CF	52	Ceramic Filter	CTF1292
CF	53	Ceramic Filter	CTF1292
CF	232	Ceramic Filter	CTF1348
X	151	Resonator 920.5kHz	CSS1365
X	231	Crystal Resonator 10.26MHz	CSS1111
VR	154	Semi-fixed 150kΩ(B)	CCP1213
AR	1	Capacitor with Discharge Gap	DSP-201M
RESISTORS			
R	1		RS1/16S0R0J
R	4		RS1/16S154J
R	5		RS1/16S391J
R	6		RS1/16S223J
R	7		RS1/16S123J
R	8		RS1/16S332J
R	9		RS1/16S473J
R	10		RS1/16S223J
R	11		RS1/16S124J
R	13		RS1/16S563J
R	15		RS1/16S271J
R	16		RS1/16S104J
R	17		RS1/16S332J
R	18		RS1/16S332J
R	31		RS1/16S470J
R	32		RS1/16S822J
R	33		RS1/16S822J
R	34		RS1/16S331J
R	35		RS1/16S331J
R	51		RS1/16S271J
R	52		RS1/16S560J
R	55		RS1/16S102J
R	56		RS1/16S823J
R	61		RS1/16S392J
R	62		RS1/16S393J
R	101		RS1/16S272J
R	102		RS1/16S682J
R	103		RS1/16S333J
R	104		RS1/16S334J
R	105		RS1/16S683J
R	107		RS1/16S222J
R	151		RS1/16S222J
R	152		RS1/16S393J
R	154		RS1/16S104J
R	155		RS1/16S273J
R	156		RS1/16S243J
R	157		RS1/16S203J
R	160		RS1/16S222J
R	161		RS1/16S563J
R	162		RS1/16S105J
R	163		RS1/16S222J
R	202		RS1/16S223J
R	203		RS1/16S225J
R	204		RS1/16S103J
R	206		RS1/16S220J
R	207		RS1/16S101J
R	208		RS1/16S102J
R	209		RS1/16S471J
R	214		RS1/16S822J
R	215		RS1/16S822J
R	217		RS1/16S102J
R	231		RS1/16S272J
R	232		RS1/16S473J
R	237		RS1/16S103J
R	238		RS1/16S104J

=====Circuit Symbol & No.===Part Name			Part No.
R	239		RS1/16S104J
R	240		RS1/16S332J
R	241		RS1/16S202J
R	243		RS1/16S123J
R	244		RS1/16S103J
R	247		RS1/16S123J
CAPACITORS			
C	1		CCSQCH6R0D50
C	2		CCSRCK2R0C50
C	4		CCSRCH820J50
C	6		CCSRCH820J50
C	8		CKSRYB103K25
C	9		CKSQYB104K16
C	10		CCSRCKR50C50
C	11		CEJA1R0M50
C	12		CKSRYB222K50
C	13		CKSRYB222K50
C	14		CCSRCH220J50
C	16		CCSRCH8R0D50
C	17		CKSRYB222K50
C	18		CKSRYB103K25
C	19		CKSRYB222K50
C	20		CKSRYB222K50
C	21		CEJA100M16
C	22		CCSRTH9R0D50
C	23		CCSRTH120J50
C	24		CCSRCH471J50
C	25		CKSRYB103K25
C	31		CKSRYB103K25
C	32		CKSQYB472K50
C	33		CCSRCH5R0C50
C	34		CKSQYB104K16
C	36		CCSRRH201J50
C	51		CKSRYB223K25
C	52		CKSRYB103K25
C	54		CCSRCH470J50
C	55		CKSQYB223K25
C	56		CKSQYB104K16
C	57		CKSRYB472K50
C	58		CEJA330M10
C	59		CKSRYB103K25
C	61		CCSRCH270J50
C	62		CKSRYB103K25
C	63		CEJAR15M50
C	101		CEJANP100M10
C	102		CKSRYB182K50
C	103		CKSRYB682K25
C	104		CEJA2R2M50
C	105		CKSRYB103K25
C	106		CCSRCH151J50
C	107		CKSRYB103K25
C	151		CKSRYB472K50
C	152		CKSQYB104K16
C	153		CEJA3R3M50
C	154		CKSQYB104K16
C	157		CEJA3R3M50
C	158		CKSYB474K16
C	159		CEJA220M6R3
C	160		CKSQYB104K16
C	161		CKSQYB104K16
C	162		CEJA3R3M50
C	163		CKSRYB102K50
C	170		CCSRCH100D50
C	201		CCSRCH471J50
C	202		CCSRCH100D50
C	203		CKSRYB332K50
C	204		CKSQYB473K16

=====Circuit Symbol & No.===Part Name			Part No.
C	205		CKSQYB473K16
C	206		CKSQYB104K16
C	207		CCSRCH560J50
C	209		CKSQYB104K16
C	211		CCSRCH101J50
C	212		CEJA470M6R3
C	213		CKSRYB103K25
C	216		CCSRCH101J50
C	217		CEJA1R5M50
C	219		CCSRCH471J50
C	220		CKSRYB103K25
C	230		CKSRYB103K25
C	231		CCSRCH330J50
C	232		CCSRCH150J50
C	233		CKSQYB104K16
C	234		CEJA330M10
C	235		CKSRYB332K50
C	236		CKSQYB473K16
C	237		CCSRCH120J50
C	239		CKSRYB472K50
C	240		CEJAR47M50
C	241		CKSQYB104K16
C	242		CEJAR47M50
C	243		CEJAR33M50
C	244		CKSQYB473K16
C	245		CKSRYB123K25
C	246		CKSQYB473K16
C	250		CCSRCH471J50

Tuner Amp Unit
Consists of
Mother PCB
Power Amp PCB

A D Unit Number : CWM4848
Unit Name : Tuner Amp Unit

MISCELLANEOUS

IC	101	IC	LA3161P
IC	301	IC	TDA7385
IC	401	IC	PM2005B
IC	451	IC	SN761027DL
IC	601	IC	PMW001B
IC	602	IC	NJM2903M
IC	701	IC	PD4752A
IC	702	IC	S-80734AN
IC	703	IC	S-29220A
Q	201	Transistor	2SD1757K
Q	202	Transistor	2SD1757K
Q	203	Transistor	DTC343TS
Q	204	Transistor	DTC343TS
Q	205	Transistor	DTC343TS
Q	206	Transistor	DTC343TS
Q	210	Transistor	DTC143TS
Q	211	Transistor	DTC143TS
Q	212	Transistor	DTA114ES
Q	401	Transistor	DTC114EK
Q	402	Transistor	2SC2458
Q	403	Transistor	2SC2458
Q	404	Transistor	2SC2458
Q	701	Transistor	DTA114ES
Q	702	Transistor	DTC124TS
Q	703	Transistor	2SC2458
Q	704	Transistor	2SC2458
Q	705	Transistor	2SC2458
Q	706	Transistor	DTC144EK
Q	710	Transistor	DTC114ES
Q	711	Transistor	DTA114ES

=====Circuit Symbol & No.		===Part Name	Part No.
Q	712	Transistor	2SC2458
Q	713	Transistor	DTC143EK
Q	801	Transistor	2SD1859
Q	802	Transistor	2SA1048
Q	803	Transistor	DTC143EK
Q	804	Transistor	2SD2395
Q	805	Transistor	DTC114ES
Q	806	Transistor	2SA1048
Q	807	Transistor	2SA1048
Q	808	Transistor	DTC114ES
Q	809	Transistor	2SA1048
Q	901	Transistor	2SD2395
Q	958	Transistor	2SB1242
Q	959	Transistor	DTC143TS
D	101	Diode	1SS133
D	201	Diode	MA151WA
D	301	Diode	ERC05-10BE3
D	401	Chip Diode	MA151K
D	402	Diode	1SS133
D	602		HZS5LL(C)
D	656	Diode	MA153
D	657	Diode	MA153
D	659	Diode	MA153
D	660	Diode	MA153
D	701	Diode	1SS133
D	703	Chip Diode	MA151WK
D	704	Diode	HZS7L(C3)
D	705		HZS9L(A1)
D	706	Diode	HZS9L(A2)
D	751	Diode	ERA15-02
D	753	Diode	1SS133
D	754	Diode	1SS133
D	755	Diode	ERA15-02
D	801	Diode	ERA15-02
D	802	Diode	HZS6L(B2)
D	803		HZS9L(B3)
D	901		HZS9L(B2)
D	902	Diode	1SS133
D	903	Diode	1SS133
D	904	Diode	1SS133
D	905	Diode	1SS133
D	906	Diode	1SS133
L	301	Coil	CTH1170
L	401	Inductor	LCTB101K2125
L	402	Inductor	LCTB2R2K3216
L	602	Inductor	LCTB101K2125
L	701	Inductor	LCTB2R2K2125
L	702	Inductor	LCTB2R2K2125
X	401	Crystal Resonator 7.200MHz	CSS1379
X	601	Crystal Resonator 4.332MHz	CSS1056
X	701	Ceramic Resonator 6.29MHz	CSS1310
VR	401	Semi-fixed 22kΩ(B)	CCP1208
FU	301	Fuse 10A	CEK1136
		FM/AM Tuner Unit	CWE1466

RESISTORS

R	101	RS1/10S273J
R	102	RS1/10S273J
R	103	RS1/10S470J
R	104	RS1/10S470J
R	105	RS1/10S472J
R	106	RS1/10S472J
R	107	RS1/10S104J
R	108	RS1/10S104J
R	109	RS1/10S0R0J
R	110	RS1/10S0R0J
R	201	RS1/10S272J
R	202	RS1/10S272J
R	203	RS1/10S151J
R	204	RS1/10S151J
R	205	RS1/10S0R0J
R	206	RS1/10S0R0J
R	211	RS1/10S272J
R	212	RS1/10S272J
R	213	RS1/8S224J
R	214	RS1/8S224J
R	215	RS1/10S223J
R	216	RS1/10S223J
R	217	RS1/8S222J
R	218	RS1/10S222J
R	219	RS1/10S223J
R	220	RS1/10S223J
R	221	RS1/10S223J
R	222	RS1/10S223J
R	223	RD1/4PU222J
R	224	RD1/4PU222J
R	225	RD1/4PU222J
R	226	RD1/4PU222J
R	227	RS1/10S562J
R	228	RS1/10S562J
R	232	RS1/10S104J
R	234	RS1/10S104J
R	235	RS1/10S391J
R	236	RS1/10S103J
R	251	RS1/10S0R0J
R	260	RD1/4PU272J
R	271	RS1/10S0R0J
R	272	RS1/8S0R0J
R	282	RS1/10S0R0J
R	283	RS1/10S0R0J
R	284	RS1/10S0R0J
R	285	RS1/10S0R0J
R	286	RS1/8S0R0J
R	287	RD1/4PU102J
R	288	RD1/4PU471J
R	301	RS1/10S103J
R	302	RS1/10S0R0J
R	401	RS1/10S272J
R	402	RS1/10S392J
R	403	RS1/10S392J
R	404	RD1/4PU222J
R	405	RS1/10S152J
R	406	RS1/10S561J
R	407	RS1/10S472J
R	408	RS1/10S682J
R	409	RS1/10S472J
R	410	RS1/10S681J
R	411	RS1/10S682J
R	412	RS1/10S222J
R	413	RD1/4PU222J
R	414	RD1/4PU102J
R	415	RS1/10S105J
R	416	RS1/10S473J
R	417	RD1/4PU473J
R	418	RD1/4PU472J
R	419	RS1/10S103J
R	420	RS1/10S103J
R	421	RS1/10S393J
R	422	RD1/4PU102J
R	423	RD1/4PU103J
R	424	RS1/10S102J

=====Circuit Symbol & No.===Part Name			Part No.	=====Circuit Symbol & No.===Part Name			Part No.
R	425		RS1/10S102J	R	711		RS1/10S473J
R	426		RD1/4PU473J	R	712		RS1/10S473J
R	427		RS1/10S562J	R	713		RS1/10S473J
R	428		RS1/10S224J	R	714		RS1/10S223J
R	429		RS1/10S562J	R	715		RS1/10S473J
R	430		RS1/10S104J	R	716		RS1/10S473J
R	431		RS1/10S562J	R	718		RS1/10S223J
R	435		RD1/4PU473J	R	719		RS1/10S473J
R	436		RS1/10S473J	R	720		RS1/10S223J
R	437		RS1/10S102J	R	721		RS1/10S473J
R	439		RS1/10S473J	R	722		RS1/10S473J
R	440		RS1/10S0R0J	R	723		RS1/10S473J
R	442		RS1/10S0R0J	R	724		RD1/4PU471J
R	443		RS1/10S0R0J	R	725		RD1/4PU471J
R	445		RS1/10S0R0J	R	726		RD1/4PU471J
R	446		RD1/4PU222J	R	728		RD1/4PU471J
R	601		RD1/4PU102J	R	729		RD1/4PU471J
R	602		RD1/4PU102J	R	730		RD1/4PU471J
R	603		RD1/4PU102J	R	731		RD1/4PU473J
R	604		RD1/4PU102J	R	732		RD1/4PU473J
R	605		RS1/10S102J	R	733		RD1/4PU473J
R	606		RS1/10S102J	R	735		RS1/10S102J
R	607		RS1/10S0R0J	R	736		RS1/10S102J
R	608		RS1/10S333J	R	737		RS1/10S473J
R	609		RD1/4PU151J	R	738		RD1/4PU473J
R	610		RD1/4PU102J	R	739		RS1/10S103J
R	611		RD1/4PU102J	R	740		RS1/10S0R0J
R	612		RD1/4PU102J	R	742		RS1/10S222J
R	613		RD1/4PU102J	R	751		RD1/4PU102J
R	615		RS1/10S472J	R	752		RD1/4PU103J
R	616		RS1/10S473J	R	754		RS1/10S103J
R	617		RS1/10S104J	R	755		RS1/10S331J
R	620		RS1/10S562J	R	756		RS1/10S103J
R	621		RD1/4PU222J	R	757		RS1/10S104J
R	622		RD1/4PU222J	R	761		RS1/8S0R0J
R	623		RS1/10S684J	R	762		RS1/10S102J
R	624		RD1/4PU681J	R	763		RS1/10S102J
R	651		RS1/10S471J	R	764		RS1/10S102J
R	652		RS1/10S471J	R	765		RS1/10S102J
R	654		RS1/10S471J	R	766		RS1/10S102J
R	655		RS1/10S471J	R	767		RS1/10S102J
R	656		RS1/10S221J	R	768		RS1/10S102J
R	657		RS1/10S221J	R	769		RS1/10S102J
R	659		RS1/10S221J	R	770		RS1/10S102J
R	660		RS1/10S221J	R	771		RD1/4PU102J
R	661		RS1/10S682J	R	772		RS1/10S681J
R	662		RS1/10S682J	R	773		RD1/4PU681J
R	663		RS1/10S682J	R	774		RS1/10S681J
R	664		RS1/10S682J	R	776		RS1/10S473J
R	665		RS1/10S682J	R	777		RS1/8S473J
R	666		RD1/4PU102J	R	780		RD1/4PU103J
R	667		RS1/10S0R0J	R	781		RS1/10S223J
R	668		RS1/10S0R0J	R	782		RS1/10S102J
R	669		RS1/10S0R0J	R	783		RS1/10S102J
R	670		RD1/4PU681J	R	784		RD1/4PU473J
R	671		RD1/4PU102J	R	801		RS1/10S103J
R	701		RS1/10S473J	R	803		RS1/10S473J
R	702		RD1/4PU473J	R	804		RS1/10S332J
R	703		RS1/10S473J	R	805		RD1/4PU471J
R	705		RS1/10S124J	R	806		RS1/10S102J
R	706		RS1/10S102J	R	807		RS1/10S473J
R	707		RD1/4PU102J	R	808		RS1/10S102J
R	708		RS1/10S102J	R	809		RS1/10S473J
R	709		RS1/10S102J	R	810		RS1/10S473J
R	710		RD1/4PU102J	R	811		RS1/10S332J

=====Circuit Symbol & No.===Part Name			Part No.
R	901		RD1/4PU4R7J
R	902		RD1/4PU4R7J
R	903		RD1/4PU471J
R	910		RS1/10S473J
R	911		RS1/10S473J
R	912		RS1/10S473J
R	913		RS1/10S473J
R	914		RD1/4PU102J
R	915		RD1/4PU102J
R	916		RD1/4PU102J
R	917		RD1/4PU102J
R	918		RS1/10S102J
R	919		RS1/10S102J
R	920		RS1/10S102J
R	921		RS1/10S102J
R	922		RS1/10S102J
R	963		RD1/4PU1R5J
R	964		RD1/4PU1R5J
R	965		RS1/10S472J
R	966		RD1/4PU102J
CAPACITORS			
C	101		CKSQYB681K50
C	102		CKSQYB681K50
C	103		CEJA2R2M50
C	104		CEJA2R2M50
C	105		CEJA101M10
C	106		CEJA101M10
C	107		CKSQYB333K25
C	108		CKSQYB333K25
C	109	220µF/10V	CCH1014
C	201		CEJA2R2M50
C	202		CEJA2R2M50
C	203		CEJA2R2M50
C	204		CEJA2R2M50
C	205		CEJANP100M10
C	206		CEJANP100M10
C	207		CKSQYB822K50
C	208		CKSQYB822K50
C	209		CEJA1R0M50
C	210		CEJA1R0M50
C	211		CEJANP100M10
C	212		CEJANP100M10
C	215		CKSQYB183K25
C	216		CKSQYB183K25
C	217		CKSQYB102K50
C	218		CKSQYB102K50
C	219		CEJANP2R2M35
C	220		CEJANP2R2M35
C	221		CKSQYB333K25
C	222		CKSQYB333K25
C	225		CEJA220M6R3
C	226		CEJA2R2M50
C	227		CKSQYB332K50
C	228		CEJA470M10
C	229		CKSQYB104K16
C	231		CKSQYB393K25
C	232		CKSQYB393K25
C	233		CEJA1R0M50
C	234		CEJA1R0M50
C	235		CEJA1R0M50
C	236		CEJA1R0M50
C	237		CEJA1R0M50
C	238		CEJA1R0M50
C	239		CKSQYB222K50
C	241		CEJANP100M10
C	242		CEJANP100M10

=====Circuit Symbol & No.===Part Name			Part No.
C	301		CEJAR22M50
C	302		CEJAR22M50
C	303		CEJAR22M50
C	304		CEJAR22M50
C	305		CKSYB104K50
C	306		CEJA100M16
C	307		CEJAR22M50
C	308	3300µF/16V	CCH1169
C	309		CEJA1R0M50
C	401	4.7µF/10V	CCH1280
C	402		CKSQYB103K25
C	403		CKSQYB103K25
C	404		CKSYB332K50
C	405		CKSQYB103K25
C	406	4.7µF/10V	CCH1280
C	407		CKSQYB103K25
C	408		CEJA220M6R3
C	409		CKSQYB103K25
C	410		CEJA220M6R3
C	411		CKSQYB103K25
C	412		CEJA100M16
C	413		CKSQYB102K50
C	414		CEJAR47M50
C	415		CCSQCH150J50
C	416		CCSQCH150J50
C	417		CKSQYB103K25
C	418		CKSQYB103K25
C	419		CKSQYB103K25
C	420		CEJA220M6R3
C	421		CKSQYB102K50
C	422		CCSQCH101J50
C	423		CKSQYB103K25
C	424		CKSQYB473K16
C	425		CKSQYB471K50
C	426		CKSQYB223K25
C	427		CKSQYB473K16
C	428		CKSQYB103K25
C	429		CKSQYB223K25
C	430		CKSQYB104K16
C	431		CKSQYB223K25
C	432		CKLSR473K16
C	434		CKSQYB223K25
C	435		CKSQYB223K25
C	442		CKSQYB103K25
C	601		CEJA4R7M35
C	602		CKSQYB104K16
C	603		CCSQCH220J50
C	604		CCSQCH220J50
C	605		CKSQYB472K50
C	606		CKSQYB104K16
C	607		CEJANP1R0M50
C	608		CKSQYB104K16
C	609		CKSQYB222K50
C	610		CEJA4R7M35
C	611		CKSQYB104K16
C	612		CKSQYB103K25
C	613		CKSQYB102K50
C	614		CEJA4R7M35
C	615		CKSQYB103K25
C	701		CKSYB473K16
C	702		CEJA4R7M35
C	703		CCSQCH101J50
C	704		CCSQCH101J50
C	705		CEJA2R2M50
C	706		CCSQCH101J50

=====Circuit Symbol & No.===Part Name			Part No.
C	707		CEJA4R7M35
C	708		CKSQYB102K50
C	709		CKSQYB102K50
C	710		CKSQYB102K50
C	711		CKSYB102K50
C	712		CKSQYB102K50
C	713		CKSQYB102K50
C	715		CKSQYB224K16
C	716		CKSQYB104K16
C	751		CKSQYB473K16
C	753		CEJA2R2M50
C	754		CEJA4R7M35
C	755		CKSQYB102K50
C	758		CKSQYB473K16
C	759		CKSQYB102K50
C	760		CKSQYB102K50
C	761		CKSQYB102K50
C	801		CEAS102M16
C	802		CKSQYB102K50
C	803		CEAS101M10
C	804		CKSQYB473K16
C	805		CEAS221M10
C	806		CKSQYB103K25
C	807		CEAS331M10
C	901		CEAS1R0M50
C	959		CEJA101M16
C	960		CKSQYB103K25

E Unit Number : CWM4849
Unit Name : Key Board Unit

MISCELLANEOUS

IL	901	Lamp 8V 60mA	CEL1484
IL	902	Lamp 8V 60mA	CEL1484
IL	903	Lamp 8V 60mA	CEL1484
IL	904	Lamp 8V 60mA	CEL1484

C Unit Number :
Unit Name : Cassette PCB

S	1	Switch(Load)	ESN1016
S	2	Switch(Mute)	ESN1017
S	3	Switch(FWD/REV)	ESH1006
S	4	Switch(Eject)	ESG1006
R	1		RD1/4HM472J

Miscellaneous Parts List

M	1	Motor Unit	EXA1467
HD	1	Head Assy	EXA1466

6. ADJUSTMENT

6.1 TUNER ADJUSTMENT

● Connection Diagram

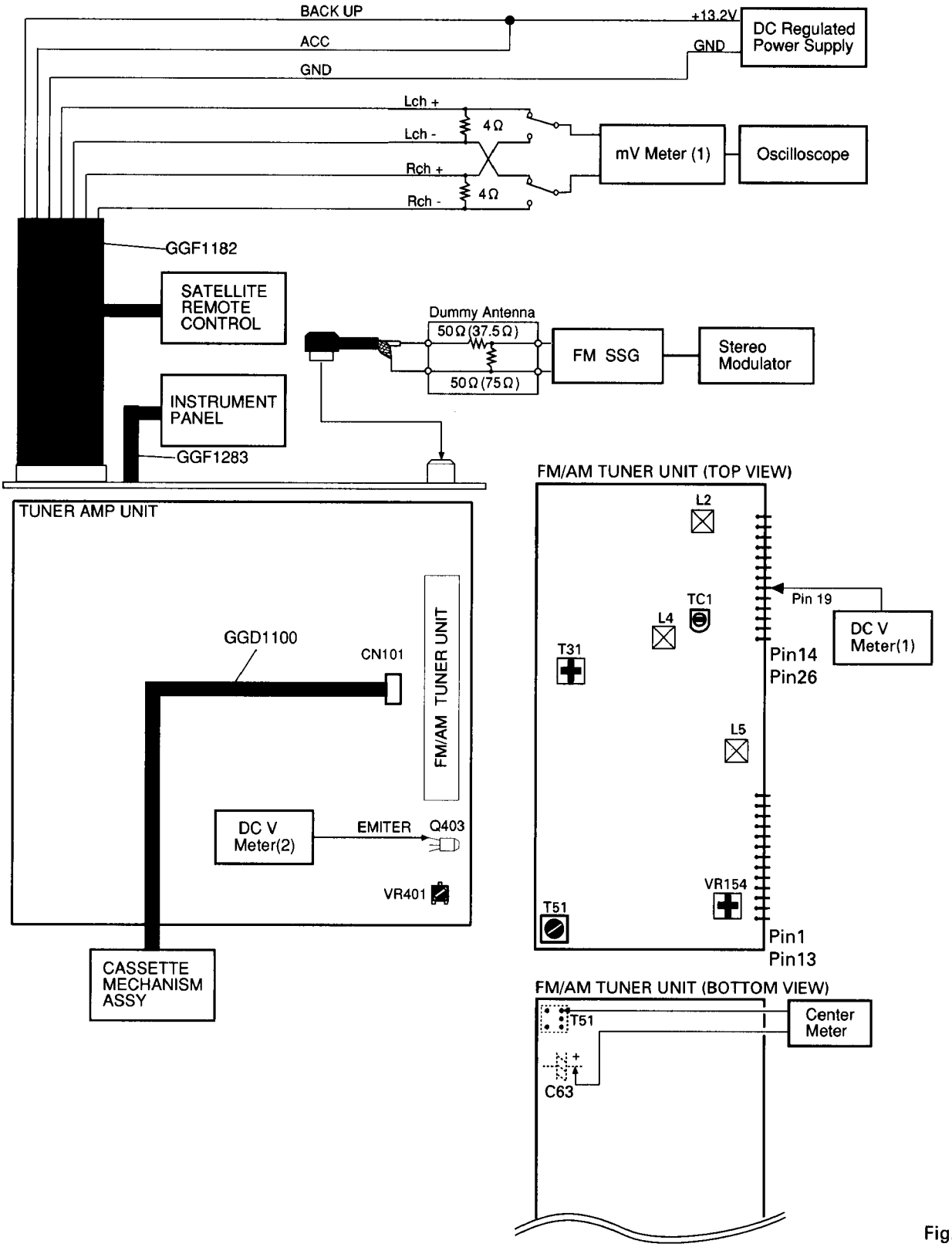


Fig. 17

6.2 FM ADJUSTMENT

Modulation M:MONO MOD., 400Hz 30%(22.5kHz Dev.) or 400Hz 100%(75kHz Dev.)
S:STEREO MOD., 1kHz, L or R=30%(20.25kHz+7.5kHz Dev.)

NOTE:Before proceeding to further adjustments after switching power ON, let the tuner run for ten minutes to allow the circuits to stabilize.

	No.	FM SSG		Displayed	Adjustment	Adjustment Method
		Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
TUN Volt	1	•••••	•••••	108.0	L5	DC V Meter(1) : 6V
IF	2	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	3	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	4	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
Image	5	129.3 M	60—80	107.9	TC1	mV Meter(1) : Minimum
IFT	6	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	7	98.1 S	40	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

6.3 RDS SL ADJUSTMENT

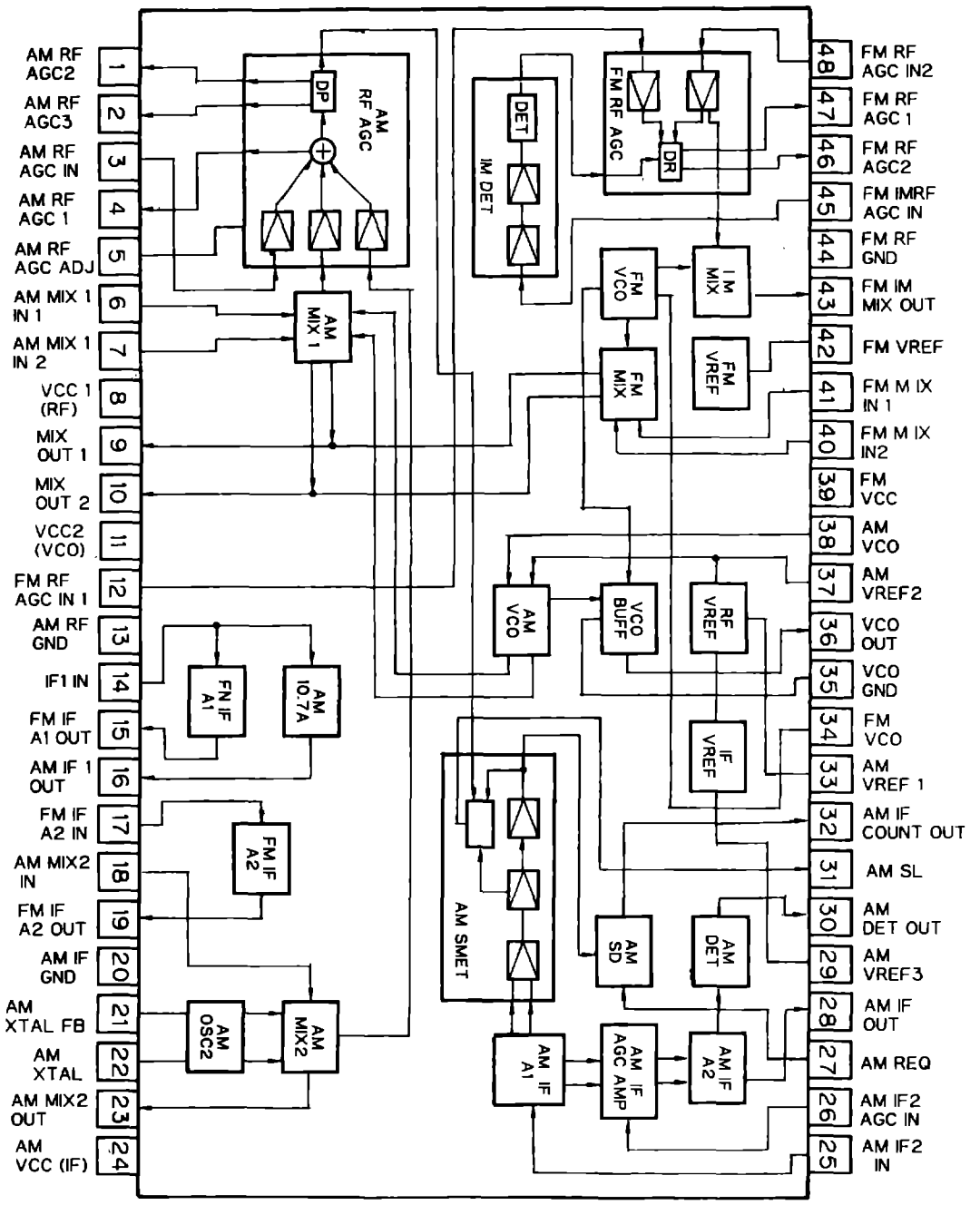
	No.	FM SSG		Displayed	Adjustment	Adjustment Method
		Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
	1	98.1 S	35	98.1	VR401	DC V Meter(3) : 7.5 ± 0.05V

7. GENERAL INFORMATION

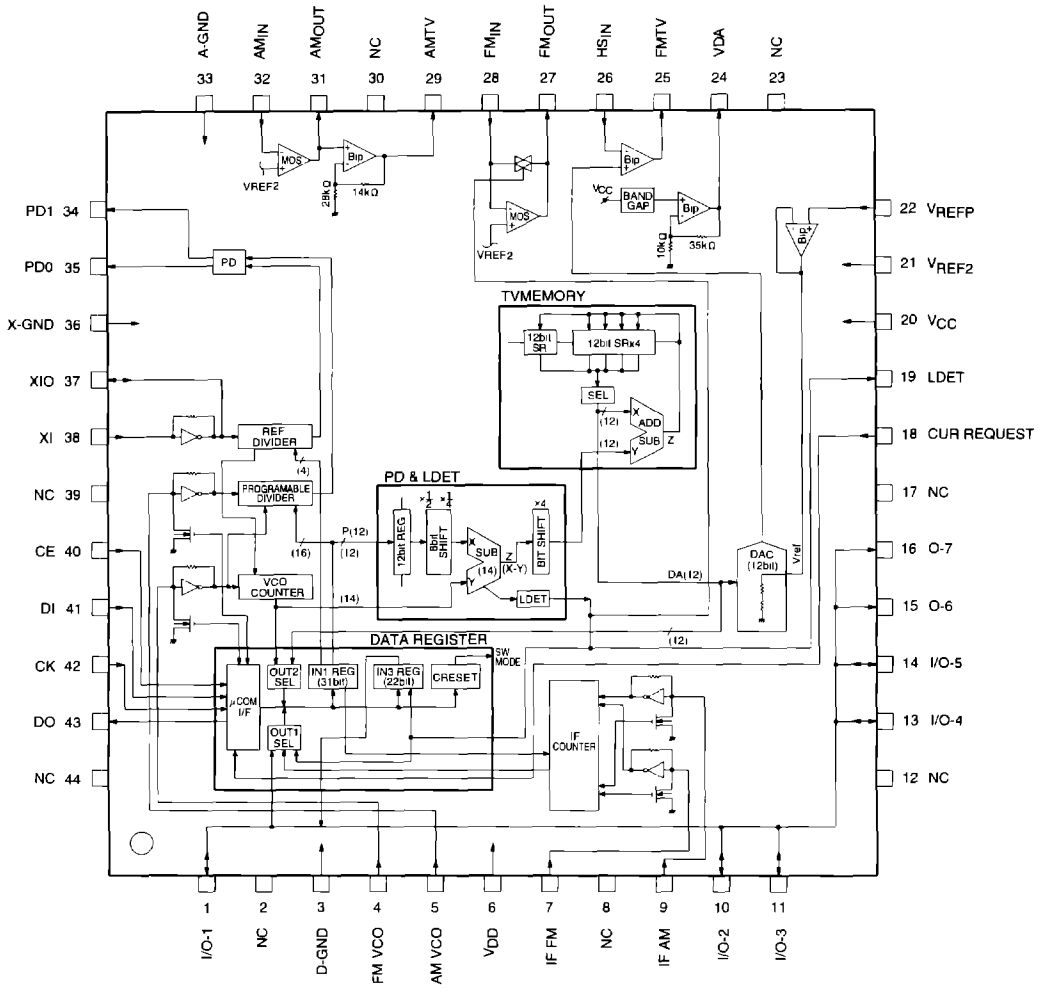
7.1 PARTS

7.1.1 IC

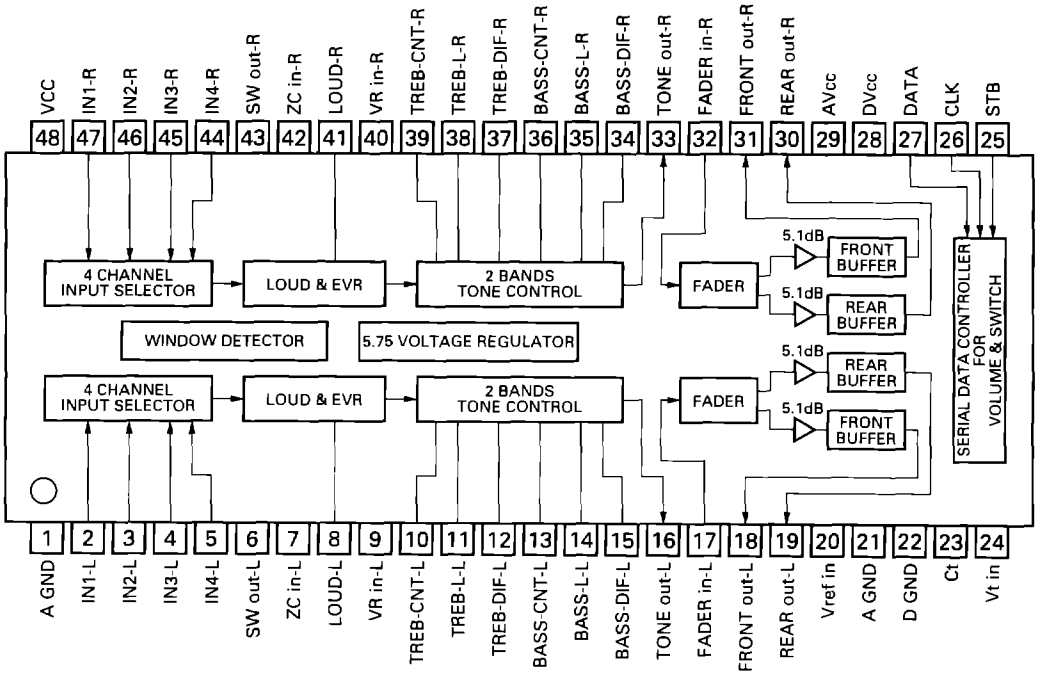
PA4023B



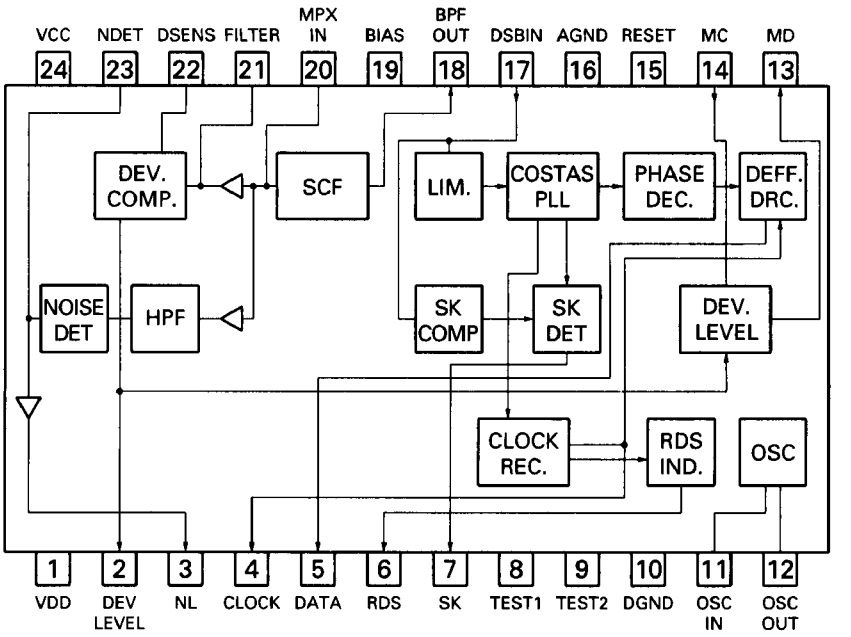
PM2005B



SN761027DL



PMW001B

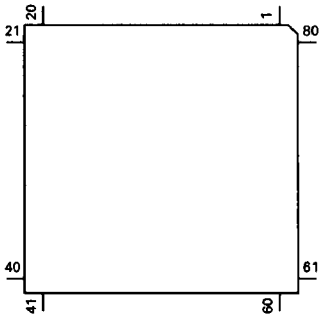


● Pin Functions (PD4752A)

Pin No.	Pin Name	I/O	Format	Function and Operation
1	OPEN			Not used
2	$\overline{\text{MECMUT}}$	I		Cassette mechanism mute input
3	$\overline{\text{N}}$/R	I		Tape direction input
4	AVSS			A/D converter ground
5	$\overline{\text{TAPLD}}$	I		Tape loading sense input
6	EDTIN	I		NV RAM data input
7	AVREF1			A/D converter reference voltage
8	AMPW	O	C	AM power output
9	FMPW	O	C	FM power output
10	ECE	O	C	Chip enable output for NV RAM
11	PDI	I		Data input from PLL IC
12	PDO	O	C	Data output for PLL IC
13	PCK	O	C	Serial clock output for PLL IC
14	PCE	O	C	Chip enable output for PLL IC
15	$\overline{\text{CURRQ}}$	O	C	Tuner voltage fix output
16	BSI	I		P-BUS serial data input
17	BSO	O	C	P-BUS serial data output
18	BSCK	I/O	/C	P-BUS clock input/output
19	SD	I		SD input
20	MUTCNT	I		NF mute control input
21	BSRQ	I		P-BUS serial pole request input
22	HKD2	I		Key input 2 from steering wheel remote control
23	HKD0	I		Key input 0 from steering wheel remote control
24	HKD1	I		Key input 1 from steering wheel remote control
25	$\overline{\text{RDSLK}}$	I		RDS LK signal input
26	RDT	I		RDS demodulation data input
27	$\overline{\text{L}}$/S		C	Sensitivity of noise level select
28	MDSENS	I		Modulation detect input
29	$\overline{\text{DRST}}$	O	C	Decoder reset output
30	RECIVE	O	C	During RDS data reception output
31	SK	I		SK signal input
32	ERROR	O	C	Disapprove of error correction output
33	VSS			GND
34	EVDT	O	C	Electric volume serial data output

Pin No.	Pin Name	I/O	Format	Function and Operation
35	EVCK	O	C	Electric volume serial clock output
36	VST	O	C	Strobe pulse output for electronic volume
37–39	HKST0–2	O	N	Key strobe output for steering wheel remote control
40	$\overline{\text{TMUTE}}$	O	C	Tuner mute output
41	BRST	O	C	Reset output
42	DKOUT	O	C	DK interrupt output
43	BINH	O	C	P-BUS display inhibit output pin
44	BRXEN	I	C	P-BUS reception enable input
45	PEE	O	C	Beep tone output
46	MCPW	O	C	Mechanism power output
47	RDS57K	I		RDS 57kHz signal input
48	SYSPW	O	C	System power control output
49	$\overline{\text{MUTE}}$	O	C	System mute output
50	$\overline{\text{SWVDD}}$	O	C	Power supply output
51–55	KST0-4	O	C	Key strobe output
56–59	KD0-KD3	I		Key data input
60	RESET	I		Reset input
61	$\overline{\text{LDET}}$	I		PLL lock sense input
62	$\overline{\text{RCK}}$	I		RDS demodulation clock input
63	$\overline{\text{ST}}$	I		FM stereo input
64	$\overline{\text{ASENS}}$	I		ACC power sense input
65	$\overline{\text{BSENS}}$	I		Back up power sense input
66	$\overline{\text{EJSENS}}$	I		Eject sense input
67	ADPW	O	C	Control output for A/D converter
68	VDD			Power supply
69	X2			Crystal oscillator connection pin
70	X1			Crystal oscillator connection pin
71	IC			GND
72	XT2			Not used
73	TESTIN	I		Test program mode input
74	AVDD			Positive power supply terminal for analog circuit
75	AVREF1			A/D converter reference voltage
76	SL	I		SD level input from tuner
77	COMP	I		RDS composite input
78	NL	I		Noise level input
79	OPEN			Not used
80	BSET	O	C	P-BUS data head set output

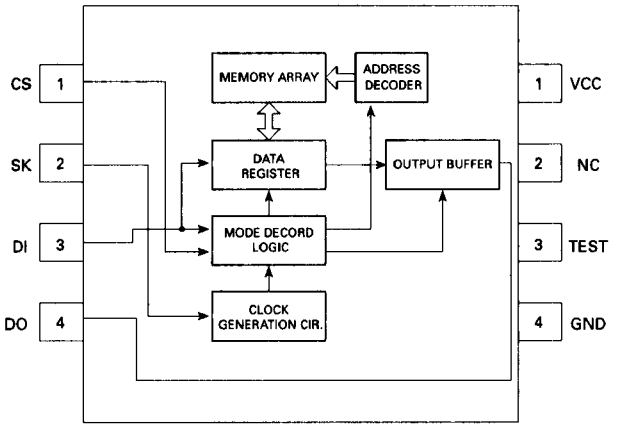
*PD4752A



IC's marked by are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

Format	Meaning
C	C MOS
N	N channel open drain

S-29220A



7.2 DIAGNOSIS

7.2.1 DISASSEMBLY

● Removing the Case(not shown)

1.Remove the screw and then remove the case.

● Removing the Cassette Mechanism Assy(not shown)

1.Remove the four screws .

2.Disconnect the connector.

3.Remove the cassette mechanism assy.

● Removing the Grille Assy(Fig.18)

1.Press the four tabs indicated by arrows and then pull out the grille assy.

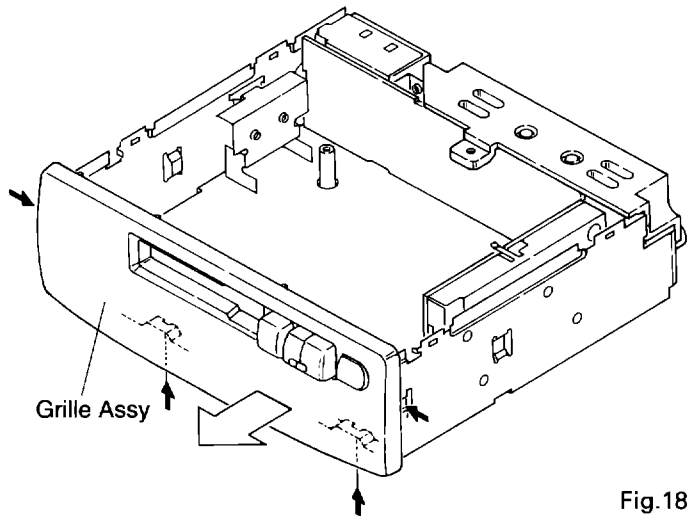


Fig.18

● Removing the Heat Sink(Fig.19)

1.Remove the two screws A and four screws B.

2.Remove the heat sink.

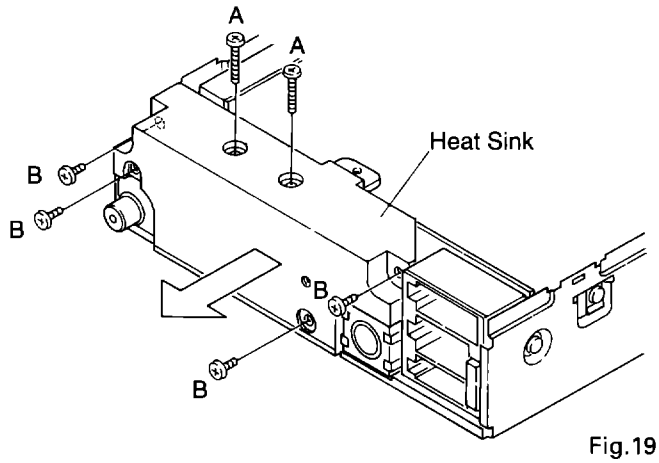


Fig.19

● Removing the Chassis Unit(Fig.20)

1.Remove the two screws C.

2.Stretch the claws indicated by arrows and then remove the chassis unit.

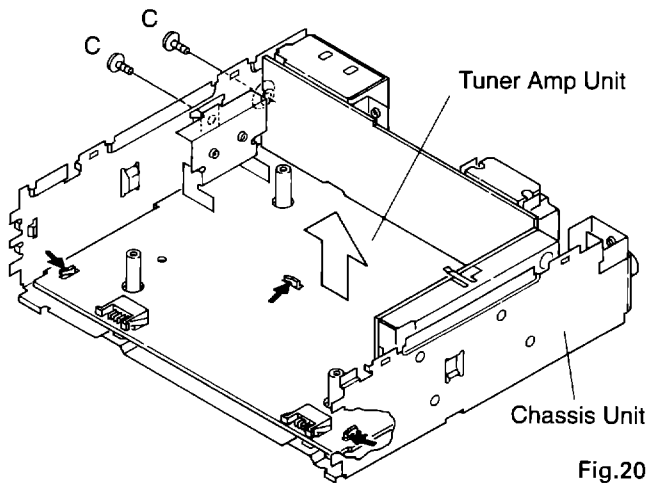
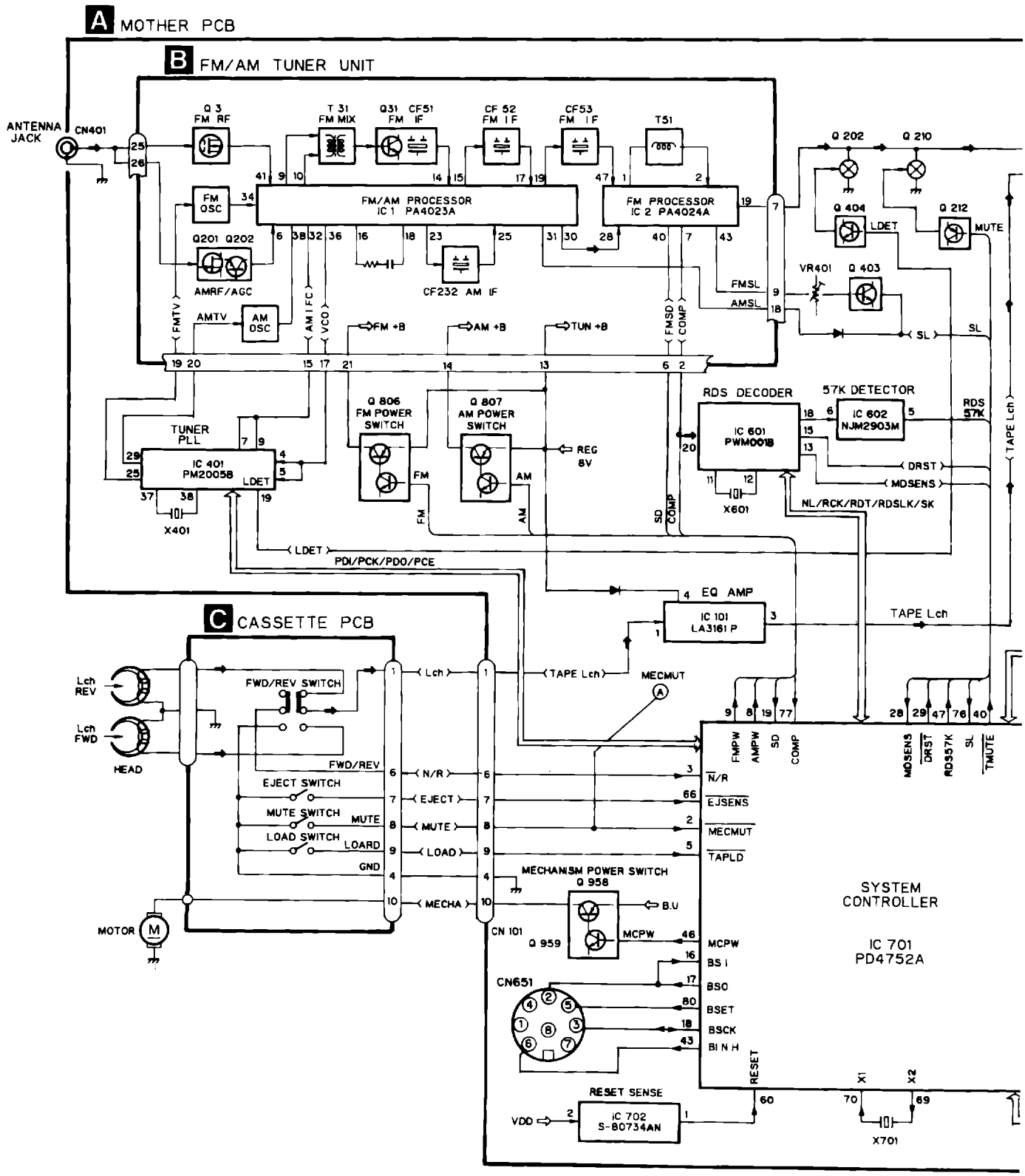


Fig.20

7.3 BLOCK DIAGRAM



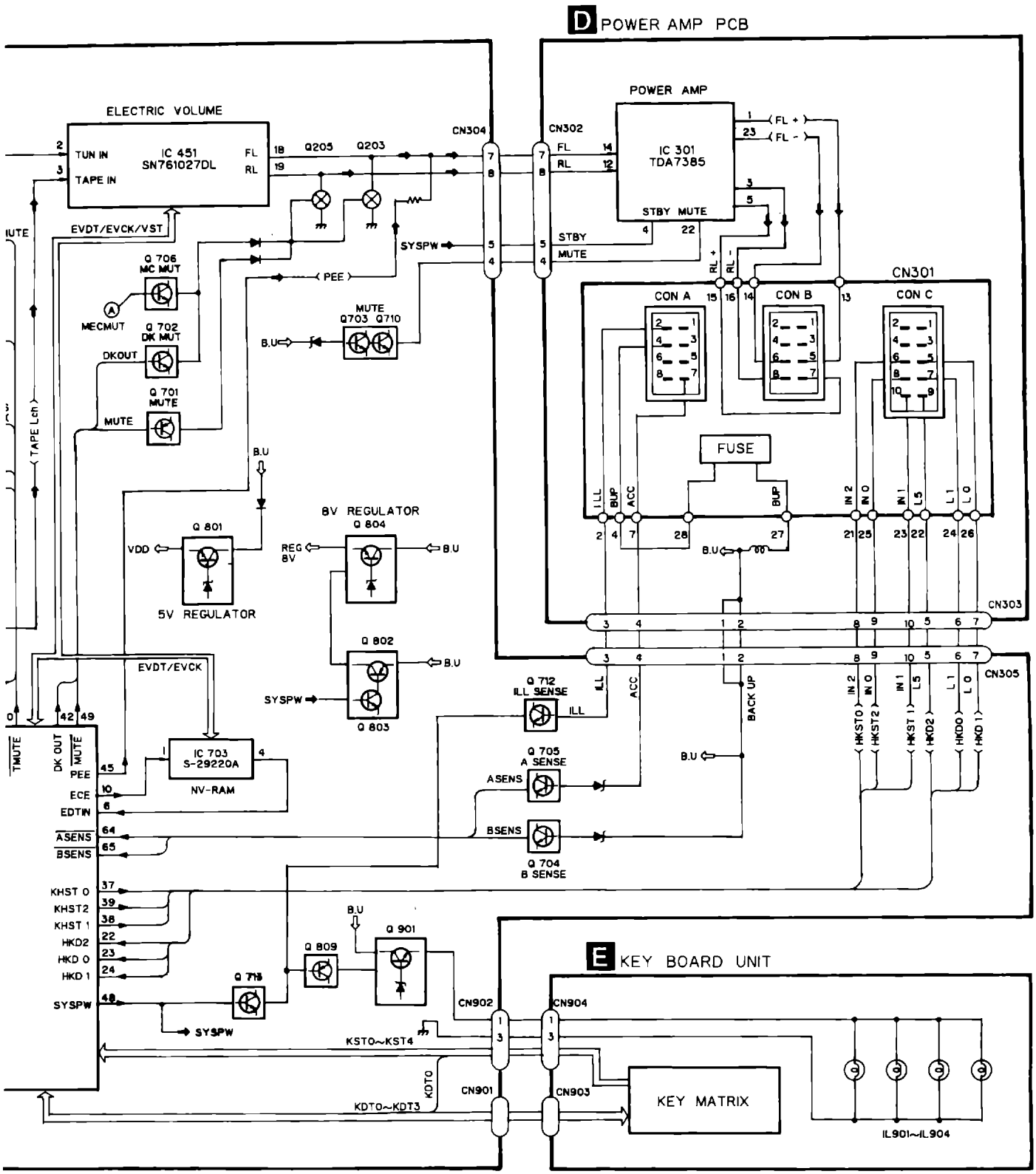
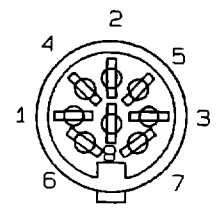

D POWER AMP PCB
ELECTRIC VOLUME
IC 451
SN761027DL
TUN IN
TAPE IN
FL
RL
Q205
Q203
CN304
CN302
POWER AMP
IC 301
TDA7385
FL +
FL -
STBY MUTE
STBY
MUTE
SYSPW
PEE
EVDT/EVCK/VST
Q 706
MC MUT
MECMUT
Q 702
DK MUT
DKOUT
Q 701
MUTE
MUTE
Q703 Q710
B.U
TAPE Lch
CN301
CON A
CON B
CON C
FUSE
ILL
BUP
ACC
IN 2
IN 0
IN 1
L5
L1
L0
8V REGULATOR
Q 804
Q 801
VDD
REG 8V
5V REGULATOR
Q 802
Q 803
CN303
CN305
EVDT/EVCK
Q 712
ILL SENSE
Q 705
A SENSE
ASENS
BSENS
Q 704
B SENSE
BACK UP
IC 703
S-29220A
NV-RAM
TMUTE
DK OUT
MUTE
PEE
ECE
EDTIN
KHST 0
KHST2
KHST 1
HKD2
HKD 0
HKD 1
Q 809
Q 901
Q 715
CN902
CN904
CN901
CN903
KST0~KST4
KDT0
KDT0~KDT3
KEY MATRIX
IL901~IL904
E KEY BOARD UNIT

Fig.21

7.4 CONNECTOR FUNCTION DESCRIPTION

CONNECTEUR ISO			
A1	N.C	A1	N.C
A2	ILL	A2	LANTERNES
A3	N.C	A3	N.C
A4	BACK UP	A4	PERMANENT
A5	N.C	A5	N.C
A6	N.C	A6	N.C
A7	ACC+	A7	ACCESSOIRE
A8	GND	A8	MASSE
B1	R.R+	B1	ARD+
B2	R.R-	B2	ARD-
B3	F.R+	B3	AVD+
B4	F.R-	B4	AVD-
B5	F.L+	B5	AVG+
B6	F.L-	B6	AVG-
B7	R.L+	B7	ARG+
B8	R.L-	B8	ARG-
C1	N.C	C1	N.C
C2	N.C	C2	N.C
C3	N.C	C3	N.C
C4	GND	C4	MASSE
C5	LO	C5	LO
C6	IN2	C6	IN2
C7	L1	C7	L1
C8	IN0	C8	IN0
C9	L5	C9	L5
C10	IN1	C10	IN1
TERMINAL NUMBER	FUNCTION	ALVEOLE	FONCTION

ENTREE AFFICHAGE	
1	GND (masse)
2	BDATA (donnees numeriques)
3	BSCK (Bus synchronisation clock)
4	BRXEN (Bus reception enable)
5	BSET (Bus set)
6	BINH (Bus inhibit)
7	GND (masse)
8	GND (masse)



AFFICH 8 POINTS
VUE EXTERIEURE

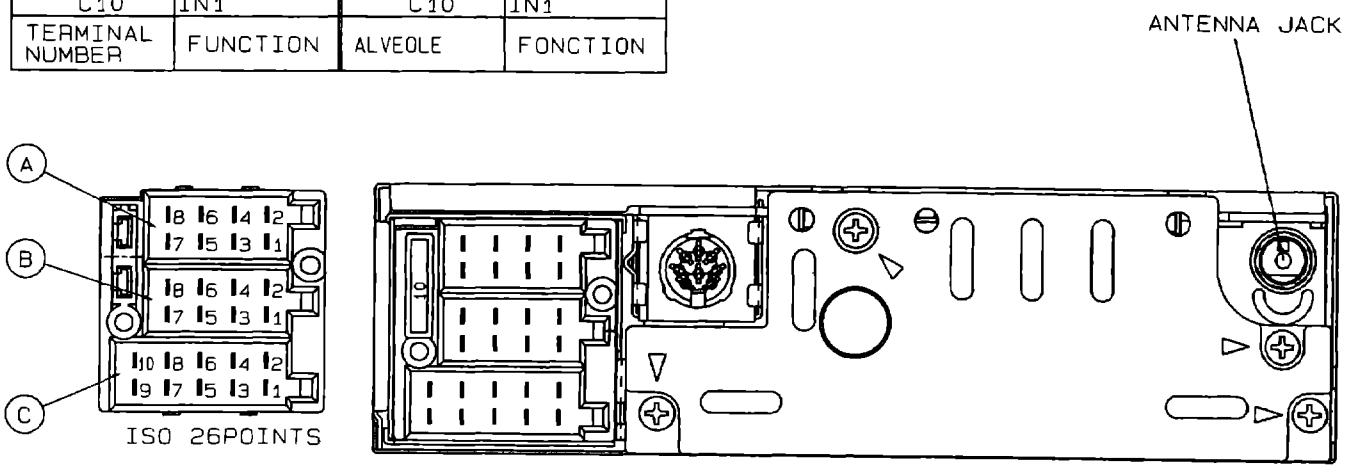


Fig.22

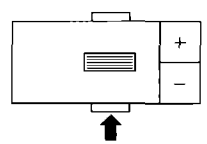
II) PROTECT YOUR RADIO FROM THEFT

Your RENAULT radio will not operate once it is removed from the console, making it virtually useless to a thief. The only way to restore power to the radio once it is removed is to enter a four-digit security code unique to your radio. The anti-theft features of your radio operate as follows:

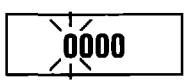
1. The removal of the battery from the car of the radio will render the radio inoperable until voltage is restored and the security code is entered. The radio must be turned on before the code is entered. The word "CodE" will show on the display.

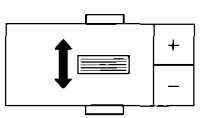
2. To enter your security code number.

   For Example: You want to enter the code 9451

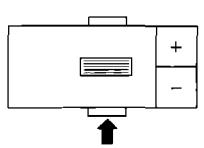


A: Press the button to initiate the first digit entry mode.



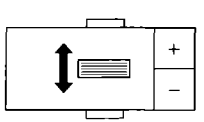


B: Turn the knob to display "9".

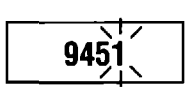


C: Press the button to initiate the second digit entry mode.

D: Turn the knob to display "4".



E: Repeat C and D above to display "9451".



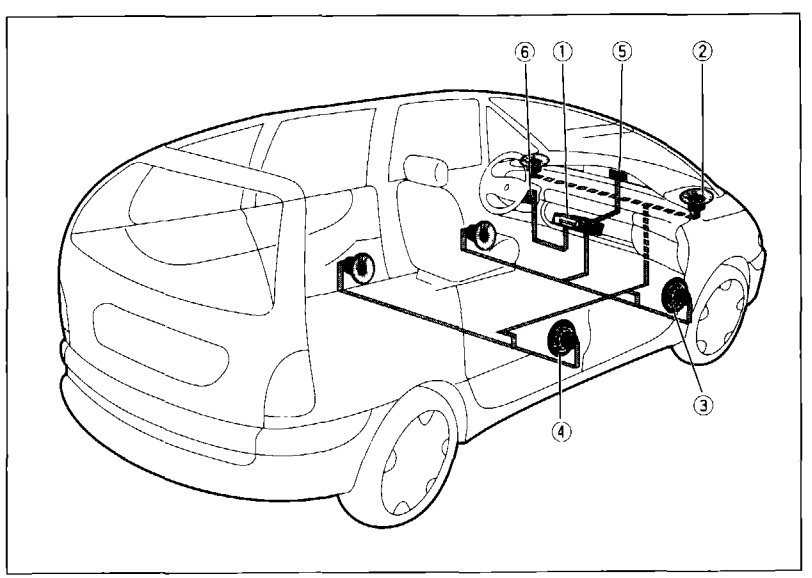
I) DESCRIPTION OF THE SYSTEM

Audio components:

① Tuner deck amplifer
②~④ 6 loudspeakers
⑤ Display on instrument panel
⑥ Steering wheel satellite remote control

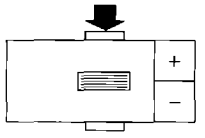
Principal features

- AM/FM stereo reception
- Tuner equipped with all RDS EON operations
  - Network follow (AF)
  - Traffic Announcements (TA)
  - Regional mode (REG)
- Best Station Memory (BSM)
- Autoreverse cassette player
- Secret code anti-theft protection
- Sound quality adjustable to personal preference



III) SIMPLIFIED GUIDE

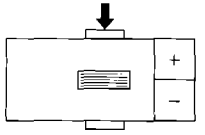
1) Satellite functions:



The audio players and radio are activated successively with each long push on this button.

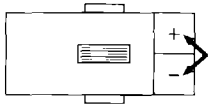
OFF → RADIO[1] (CASSETTE) → OFF

[1] The unit is switched to radio receiver when no cassette tape has been loaded. It is switched to cassette tape player when a cassette tape has been loaded.



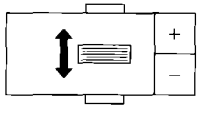
In radio mode, the band is changed each time this button is pressed briefly.

FM1 → FM2 → FM3 → MW/LW → FM1 → FM2 → etc.



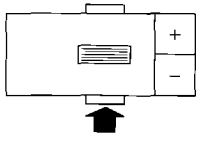
These two buttons control sound volume.

Also, the volume can be decreased by pulling the two buttons simultaneously. To return to the original position, pull the two buttons again or adjust volume by one button only.

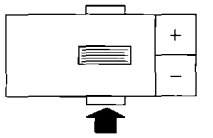


Moving the knob in either direction, by one or more turns, results in:

- When listening to the radio, a change of stations stored in memory (six possible choices in a loop)



Pressing this button results in:
- In radio mode:
With a long push, seek tuning with increasing frequency.
When the button is pressed briefly, a step-by-step tuning is performed.



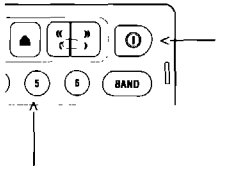
F: Press and hold the button to validate security code.
A wrong input disables you to enter the code number for 1 minute. Like wise, the code number cannot be entered for 2, 4, 8, 16, and 32 minutes.
You should keep the radio turned on during these waiting time.

3. For the sake of safety, never leave your code number in the car. If you should not know the code number, please contact a RENAULT dealer nearest to you. The dealer will contact RENAULT so as to inform you of your code number.

4. If the radio fails and require servicing, be sure to release the anti-theft feature before calling for service. After it has come back from servicing, turn the anti-theft feature on again.

WARNING:
FOR YOUR PROTECTION, CODES WILL **NOT** BE GIVEN OUT TO ANYONE - UNDER ANY CIRCUMSTANCES - EXCEPT AUTHORIZED RENAULT DEALER PERSONNEL AFTER PROOF OF RADIO OR VEHICLE OWNERSHIP AND PROPER IDENTIFICATION IS ESTABLISHED.

How to turn anti-theft feature off and on



1. While the power of the radio is off, press two buttons simultaneously to enter the security code entry mode.

2. Enter the code by following steps A to F in step 2 in the procedure above. The anti-theft feature will be turned off when the correct code is entered.

3. Repeat the steps 1 and 2 every time when you want to turn the anti-theft feature on.

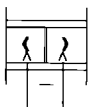
WARNING:
IF YOU TURN OFF THE ANTI-THEFT FEATURE, YOUR RADIO WILL NOT BE PROTECTED AGAINST THEFT ANY MORE

2.3) How to use the radio?

a) Select Tuner mode

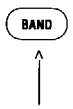
Press the button to turn on the radio.
- If a cassette is loaded press the ⏏ button to eject it.

b) Choose a station



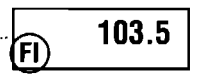
- Pressing the button (<) or (>) continuously (2 audible pips) causes the system to run through the frequencies to the next station picked up.
- A step-by-step tuning is executed by pressing this button briefly.

c) Changing the band



In radio mode, each time this button is pressed the band changes as follows:

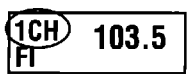
FI → FII → FIII → M or L → FI → etc. ...



- FI, FII, FIII are three identical FM bands which provide increased memory options (6 stations per band)
- M corresponds to medium wave (MW) and L to long wave (LW)

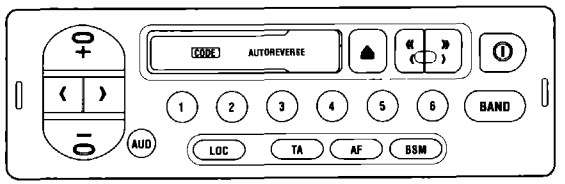
d) Storing a station

The current station is stored in the memory by pressing one of these numeric buttons continuously.
The logo " x CH " flashes and is then displayed continuously and a pip confirms that the station has been stored in the memory.



To listen to a station which was stored in the memory, briefly press one of these buttons.

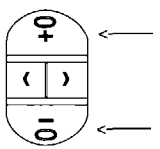
2) Operations on the main unit:



2.1) How to switch on your audio system?

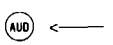
Press the button to turn power on. Pressing it again turns power off.

2.2) How to adjust the sound?



- Volume:

  Press the + or – button

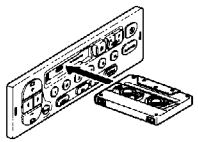


- Sound quality

After pressing the AUD button once, select the required adjustment by pressing the button several times in succession.
1st press: Tuner info → 2nd: FADER (+: forward; –: backward) → 3rd: BASS → 4th: TREBLE → 5th BALANCE –: to the right; +: to the left)
- In the MW/LW band, the unit does not change to Tuner info mode.

2.6) How to use the cassette player

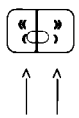
- To switch on the cassette player



Insert a cassette tape into the cassette insertion slot.

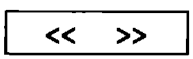
Press the ⏏ button to eject the tape.

- Fast forward and rewind



Press the (<<) or (>>) button.

	<<	>>
PLAY A	rewind	fast foward
PLAY B	fast foward	rewind



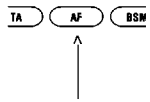
To release the fast tape transport, press the button indicating the opposite direction to the button which was pressed above.

- autoreverse

Press the (<<) and (>>) buttons simultaneously to switch the played tape side.
- The << and >> indicators light up when the played side is switched.

" PLAY A " or " PLAY B " is displayed during playback.
If playback has been stopped by turning the radio off, it will resume at the same point when turning the radio on.

e) Using the network follow system during a long journey (AF)



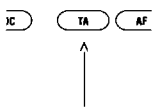
This is only available if the station selected is an RDS station. If the name of the station does not appear on the display it is not an RDS station and the function does not apply.

Press the AF button. The following display should then appear:

If the station selected is not an RDS one, "AF" will not appear.
To cancel the function, press AF again.

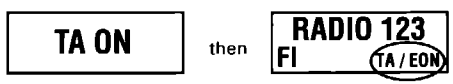
After the AF mode is selected, it remains operational irrespective of the frequency and the FM band selected.

2.4) Using traffic information (TA) mode (on FM only)



- In radio mode, traffic information from the selected station or another linked station can be received. This function is only possible if the selected station displays the letters TP or EON/ TP.

Press the TA button, the following should appear on the display:



If the station is not TP, the TA logo will not appear.

- When in cassette mode, if you wish to listen to traffic bulletins press the TA button. The audio system will automatically seek for a station broadcasting these messages. When a message is broadcast, it will interrupt the cassette. At the end of the bulletin, the cassette will resume operation.

When a traffic bulletin is broadcast, " TRAFFIC " will appear on the dashboard display for 7 seconds.

After the TA mode is selected it remains active irrespective of the mode selected, except for AM.

2.5) How to recognise the status of the functions (AF), (TA) and (REG).

- If the AF, TA or REG displays appear continuously, the corresponding function is active.
- If the AF, TA or REG displays do not appear continuously the corresponding function is not active.

To check this, press the AUD button:
- If the AF, TA or REG displays flash, the function has been selected but is not available on the station chosen.
- If the AF, TA or REG displays do not appear, the corresponding function has not been selected.

SPECIFICATIONS

Tape player

Tape ..... Compact cassette tape (C-30 — C-90)
Tape speed ..... 4.76 cm/sec.(+0.14 cm/sec.,-0.05 cm/sec.)
Wow & flutter ..... Less then 0.2 % (WRMS)
Fast forward/rewind time ..... Approx. 100sec. for C-60
Stereo separation ..... More than 35 dB

FM tuner

Frequency range ..... 87.5 — 108 MHz
Usable sensitivity ..... 10 dBf ± 5dB
Signal-to-noise ratio ..... More than 50 dB
Frequency response ..... 0 dB ± 2dB(100Hz/400Hz)(VOL over 26)
..... -14 dB ± 3dB(10kHz/400Hz)(VOL over 26)
Stereo separation ..... More than 20 dB (at 65dBf,1 kHz)
Distortion ..... Less than 1.3%

MW tuner

Frequency range ..... 531 — 1,602 kHz
Usable sensitivity .... 29 dBμ ± 5dB(Signal-to-noise ratio:20 dB)
Selectivity ..... More than 45 dB

LW tuner

Frequency range ..... 153— 281 kHz
Usable sensitivity .... 30 dBμ ± 5dB(Signal-to-noise ratio:20 dB)
Selectivity ..... More than 45 dB

General

Max. power output ..... More than 15 W
Load impedance ..... 4 Ω (4 — 8 Ω allowable)
Power source ..... DC 14.4 V(10.5—16.0 V allowable)
Grounding system ..... Negative type
Dimensions ..... 188 (W) × 50 (H) × 163 (D) mm
Weight ..... 1.4 kg

PIONEER
The Art of Entertainment

Service Manual

ORDER NO.
CRT1800

CASSETTE MECHANISM UNIT
CX-644

NOTE:

- **This service manual describes the operation of the cassette mechanism incorporated in the models listed below.**
- **When performing repairs, use this manual together with the specific manual for the model under repair.**

Model	Service Manual	Cassette Mechanism Unit
KEH-2300R/X1MA/EW, /X1M/EW, /X1IN/EW KEH-2400R/X1MA/IT, /X1M/IT, /X1IN/IT KEH-2100R/X1MA/GR, /X1M/GR, /X1IN/GR	CRT1782	EXK3455
KEH-2300R/X1B/EW KEH-2400R/X1B/IT	CRT1817	
KEH-1300/X1M/EW, /X1MA/EW, /X1IN/EW, /X1N/EW KEH-1400/X1M/IT, /X1MA/IT, /X1IN/IT, /X1N/IT KEH-1300SDK/X1M/GR, /X1MAGR, /X1INGR, /X1NGR	CRT1799	EXK3435

Model	Service Manual	Cassette Mechanism Unit
KEH-1400/X1M/UC, /X1MA/UC, /X1IN/UC, /X1N/UC KEH-1450/X1M/ES, /X1MA/ES, /X1IN/ES, /X1N/ES KEH-1311/X1M/UC, /X1MA/UC, /X1IN/UC, /X1N/UC	CRT1798 CRT1799	EXK3435
KEH-1100/X1M/EW, /X1MA/EW, /X1IN/EW, /X1N/EW KEH-1200/X1M/IT, /X1MA/IT, /X1IN/IT, /X1N/IT	CRT1819	EXK3415
KEH-1100/X1M/UC, /X1MA/UC, /X1IN/UC, /X1N/UC KEH-1150/X1M/ES, /X1MA/ES, /X1IN/ES, /X1N/ES	CRT1798 CRT1799	

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7. CAUTIONS ON ASSEMBLY AND DISASSEMBLY 28
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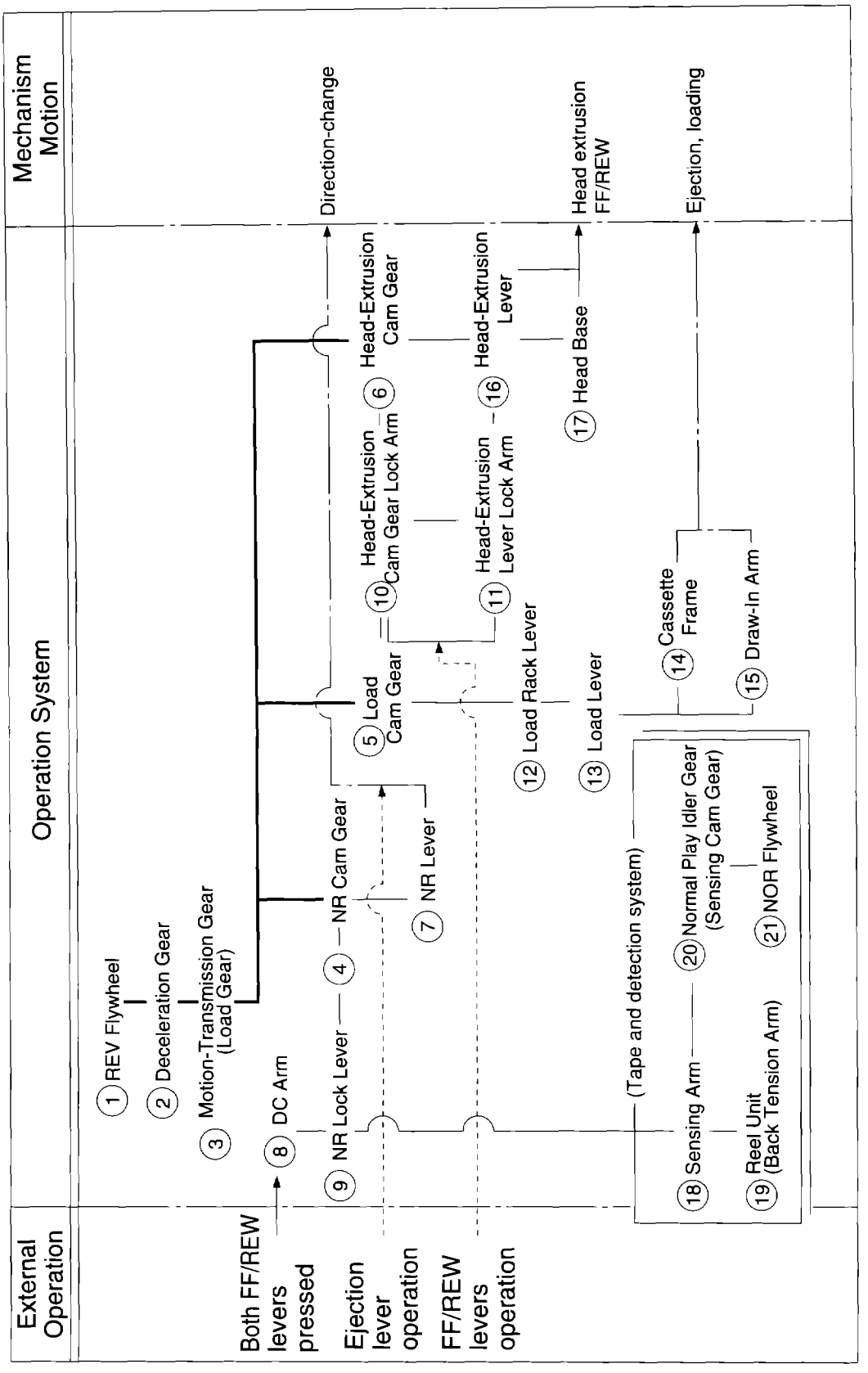
K-FFU. ARP. 1996 Printed in Japan

1. OPERATION SYSTEM PARTS INTERLINKAGE FLOWCHART



2. NAME OF EACH SECTION

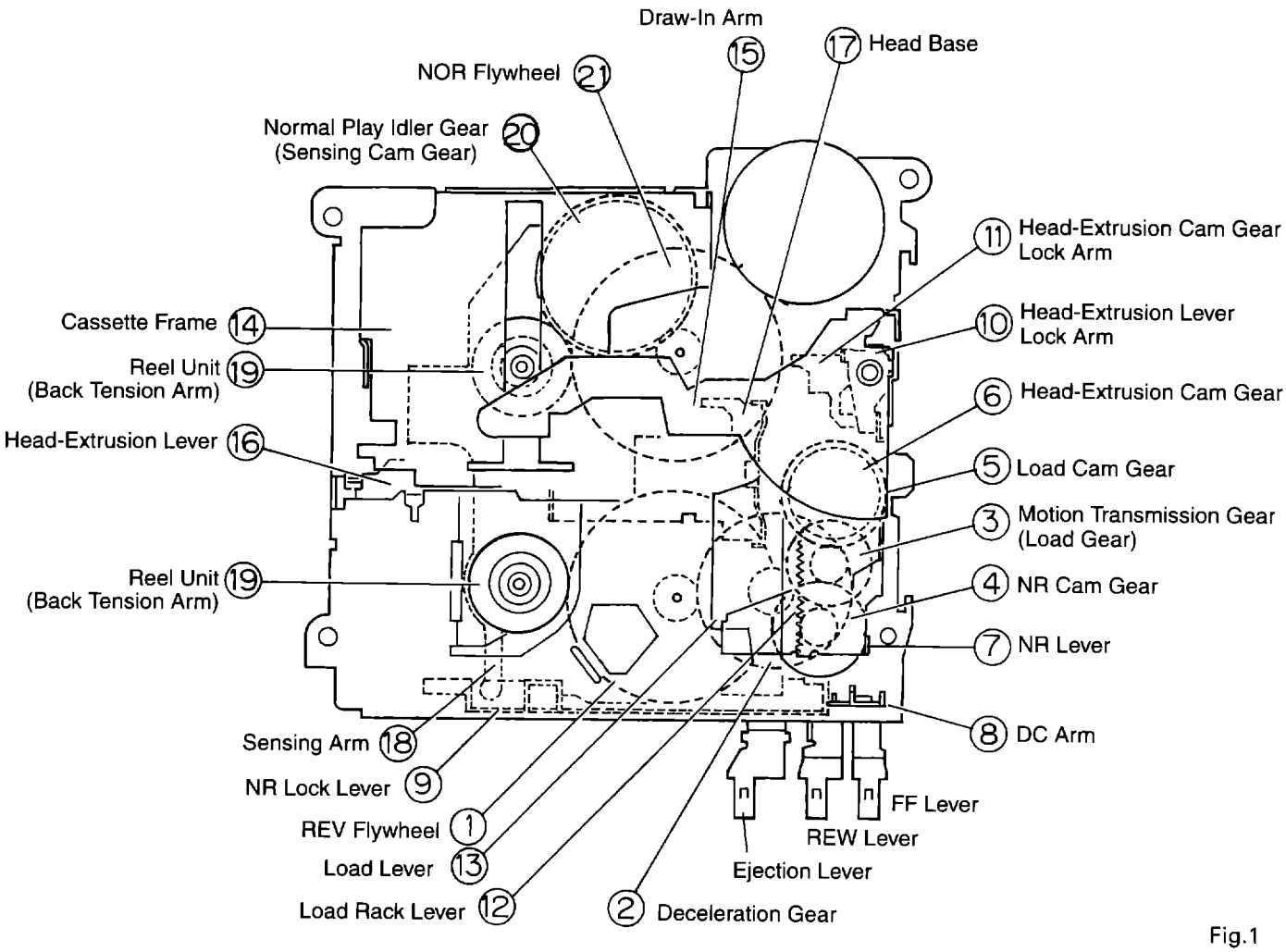


Fig.1

3. ELECTRICAL PART INTERLINKAGE

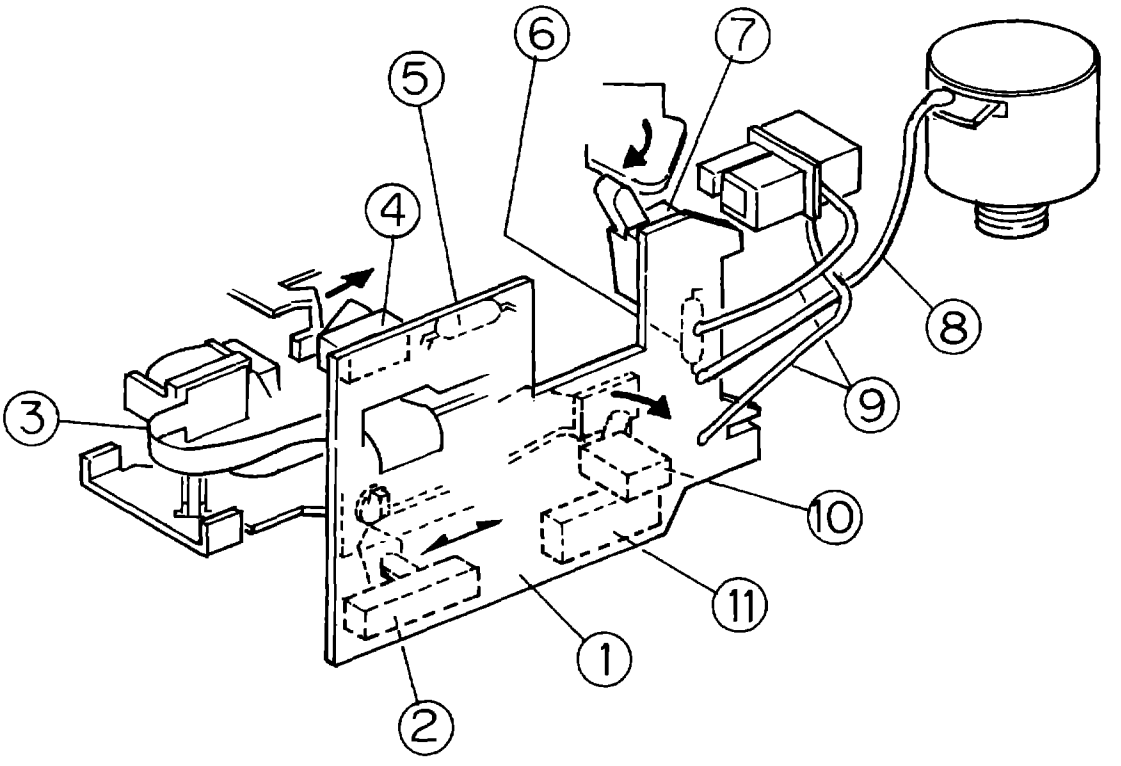


Fig.2

No.	Name	Content
1	Cassette P.C. Board	—
2	FWD/REV Select Switch	Interlinked with NR lever by a spring (for switching Head-signal)
3	Head Flexible Cable	Interlinking Head Unit and Cassette P.C. Board (for signal line)
4	Ejection Switch (only with EXK3455)	Operated by Ejection Lever (for detecting ejection)
5	Resistor (EXK3455)	Resistor for Ejection Switch
6	Diode (EXK3455)	For solenoid rectification
7	Load Switch	Interlinked with Draw-In Arm (for detecting cassette insertion)
8	Red lead wire	For the Motor, and +B power line
9	Blue lead wires, (2 pcs.) (EXK3455)	Lead wires attached to the solenoid
10	Mute Switch	Interlinked with Mute Arm (for turning Mute Circuit ON, OFF)
11	Connector	For connection with product mother P.C. Board

4. OVERVIEW OF THE MAIN CAM GEARS

In the operation system, two main cam gears work as the core of the operation and are controlled by the movements of Lock Arms and Levers.

The following cam gears are placed as shown in Fig.3:
(1) Load Cam Gear (for ejection or loading)
(2) Head-Extrusion Cam Gear (for play or FF/REW)
Both gears are interlinked with the Head-Extrusion Cam Gear Lock Arm to set the timing of Head extrusion:

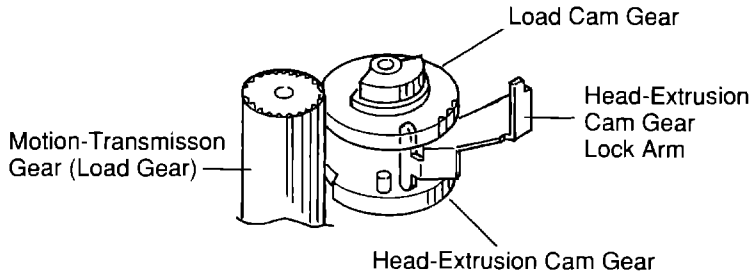


Fig.3

1) The movement of the Load Cam Gear

The Load Cam Gear consists of the following two gears:

Upper gear: Interlinked with the Rack Lever to perform loading.

Lower gear: Interlinked with the Head-Extrusion Cam Gear Lock Arm to set the timing of Head extrusion.

① **Loading area**
The Head-Extrusion Cam Gear Lock Arm locks and retains the Head-Extrusion Cam Gear during loading or ejecting.

② **Mechanism operation area**
The Head-Extrusion Cam Gear Lock Arm is released to enable its separate movements. (The position of the Load Cam Gear is held by the pressure spring.)

③ **Head-Extrusion Cam Gear release area**
The Head-Extrusion Cam Gear is released from PLAY or FF/REW lock and rotated to the release position.

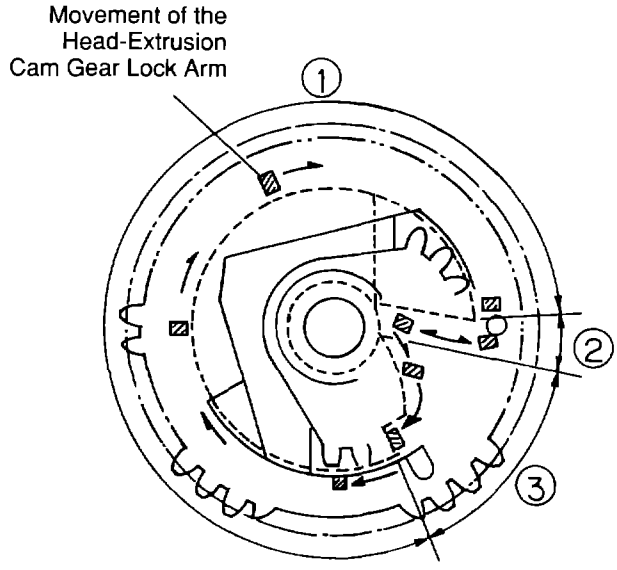


Fig.4

2) The movement of the Head-Extrusion Cam Gear

The Head-Extrusion Cam Gear consists of a cam and gear.

Cam (upper): Interlinked with the Head-Extrusion Cam Gear Lock Arm to set the timing of Head extrusion.

Gear (lower): Interlinked with the Head-Extrusion Lever to extrude the head.

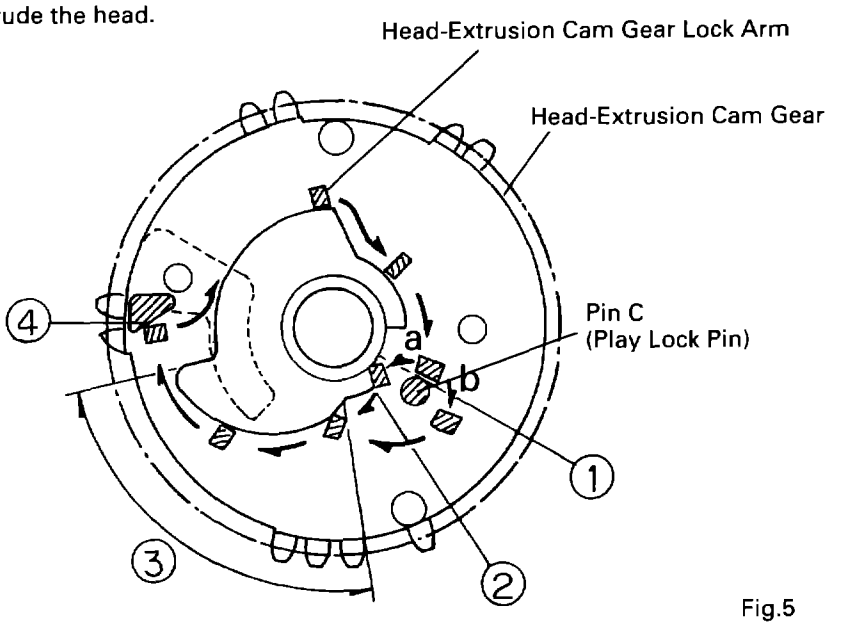


Fig.5

① Play lock position

The Head-Extrusion Lever is advanced by a full stroke. The cam of the Head-Extrusion Cam Gear is locked at this position. For FF/REW, the lock is released in the (a) direction, and for ejection, in the (b) direction as shown in Fig. 5.

② FF/REW lock position

The Head-Extrusion Cam Gear Lock Arm locks the FF or REW Lever for FF/REW, and stops at this position.

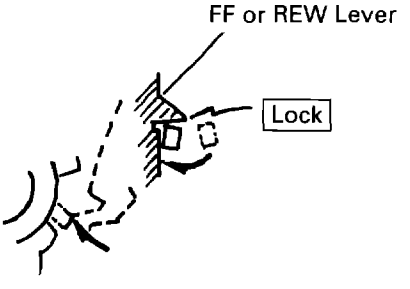


Fig.6

③ Head-Extrusion Lever release area

The Head-Extrusion Cam Gear Lock Arm is drawn in, and then it draws in the Head-Extrusion Lever Lock Arm to release the locked Head-Extrusion Lever.

④ Release lock position

After the Head-Extrusion Lever lowers in the Head-Extrusion Lever release area ③, the Head-Extrusion Cam Gear is locked at this position in the loading area of the Load Cam Gear (Play lock position).

5. THE PRINCIPLES OF OPERATION
5.1 HEAD EXTRUSION AND PLAY

Head extrusion and Play motions are performed according to the following procedures and mechanism.

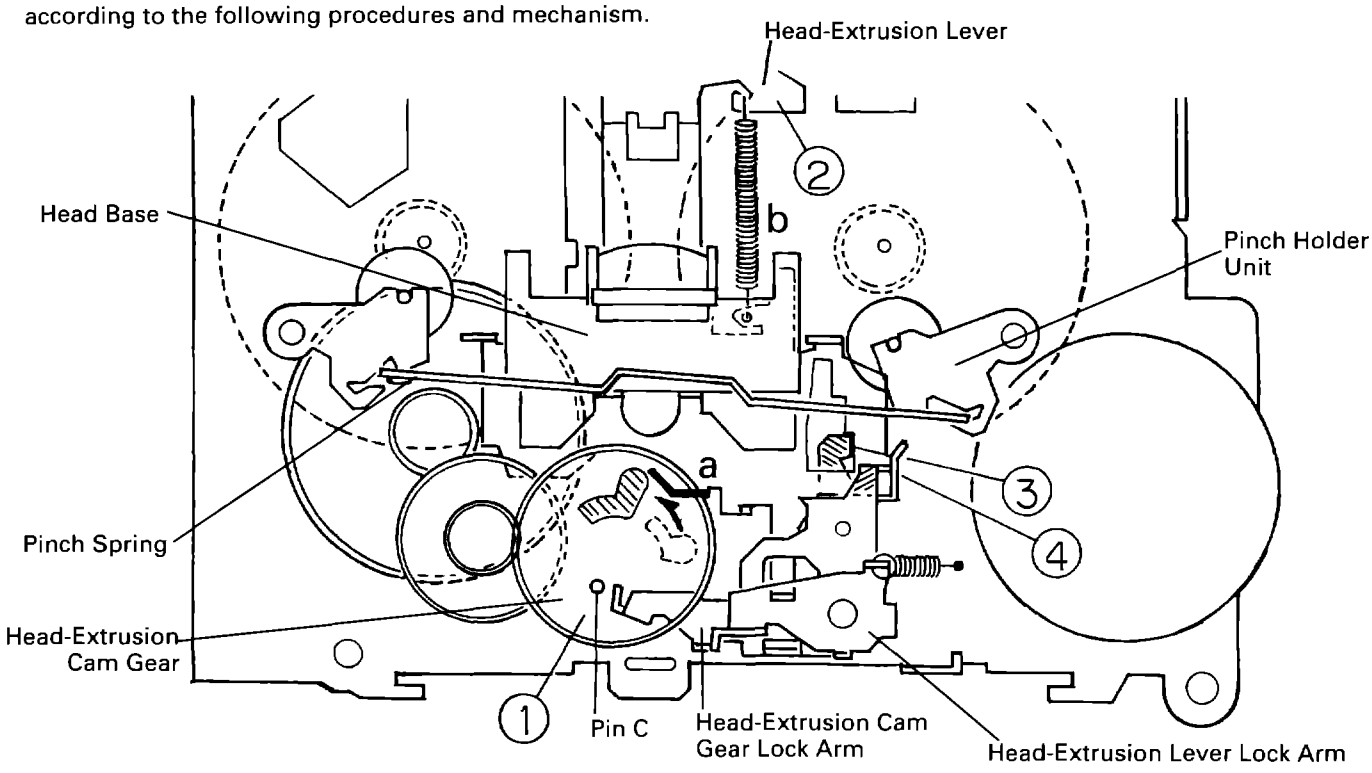


Fig.7

① When the Head-Extrusion Cam Gear Lock Arm starts its rotation from the release position, the lower surface cam of the Head-Extrusion Cam Gear presses the (a) part of the Head-Extrusion Lever to advance it.
② The Head Extrusion Lever draws out the Head Base with the (b) spring (Head-Extrusion Buffer Spring).
③ The Head-Extrusion Lever drawn out by a full stroke is locked by the Head-Extrusion Lever Lock Arm. (The Head-Extrusion Lever Lock Arm is given motive force by the spring.) The Head Base applies pressure to the Pinch Spring, and in turn the Pinch Holder Unit released from the Head-Extrusion lever sets a tape into motion.
④ When the Head-Extrusion Lever is locked at the Play Lock position, it retains the Head-Extrusion Cam Gear Lock Arm at the PLAY position with the Bend Guide. The Head-Extrusion Cam Gear Lock Arm locks the Head-Extrusion Cam Gear at Pin C (Play-Lock Pin).

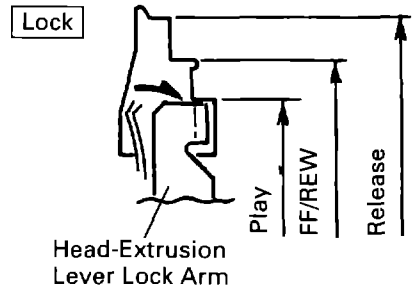


Fig.8

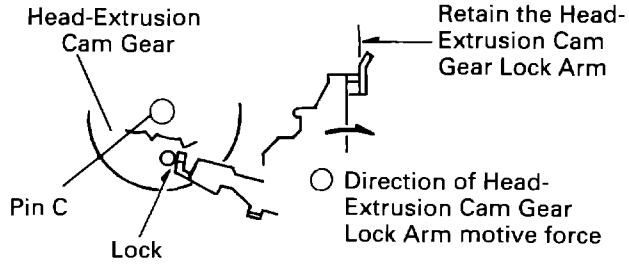

Head-Extrusion Cam Gear
Retain the Head-Extrusion Cam Gear Lock Arm
Pin C
Lock
Direction of Head-Extrusion Cam Gear Lock Arm motive force

Fig.9

● Tape Operation System for Play

When the Head-Extrusion Lever is locked at the Play position, as stated previously, the play operation system starts its operation in the following order.

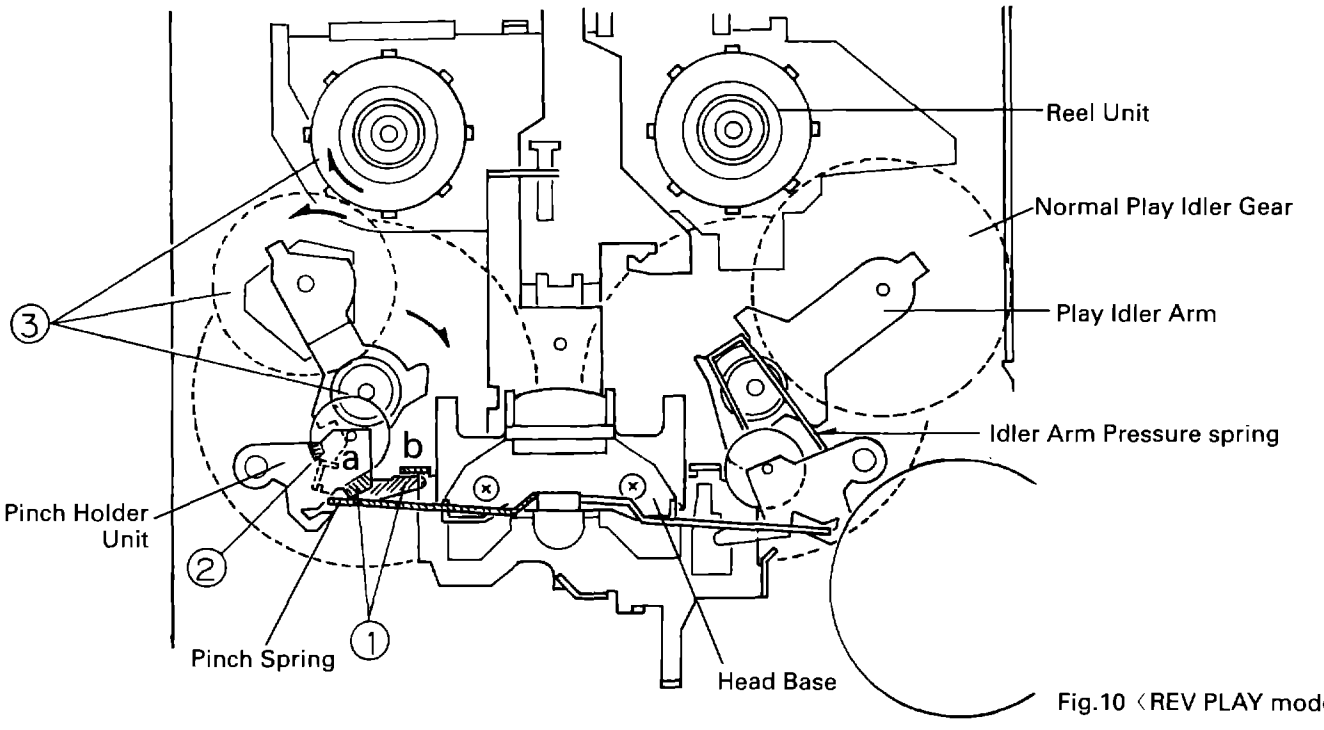


Fig.10 〈REV PLAY mode〉

① The Pinch Spring stressed by the Head Base, presses the (a) part of the Pinch Holder Unit. When the Head-Extrusion Lever further advances, the Pinch Holder Unit is released from the lock of the (b) bend to make the Pinch Roller press the Capstan.

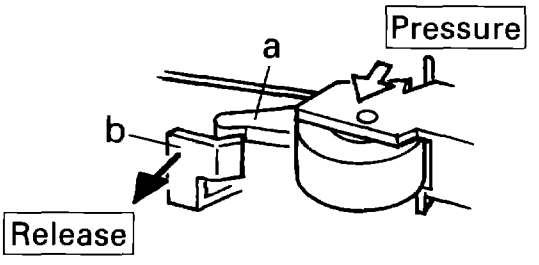


Fig.11

② Linked with the movement of the Pinch Holder Unit, the Play Idler Arm is drawn out by the spring to interlink the Reel Unit and the NOR flywheel.

* The (c) part slides in the release direction, and the Play Idler Arm proceeds to be interlinked by the tension of the spring. (Fig.12)

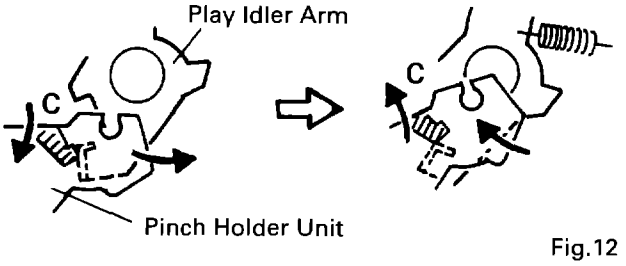


Fig.12

③ With the procedures described above, the NOR flywheel, the Normal Play Idler Gear and the Reel Unit are interlinked, and the Reel Unit rotates in the rewinding direction.

Note: The figure 10 shows the REV PLAY mode.
In the NOR PLAY mode, the procedure is reversed.

● Motions Accompanying Head Extrusion

The following accompanying motions are performed during Head extrusion.

Quasi-ATSC: The Supply Reel Unit is locked and the Take-up Reel Unit is rotated to remove any slack of a tape.

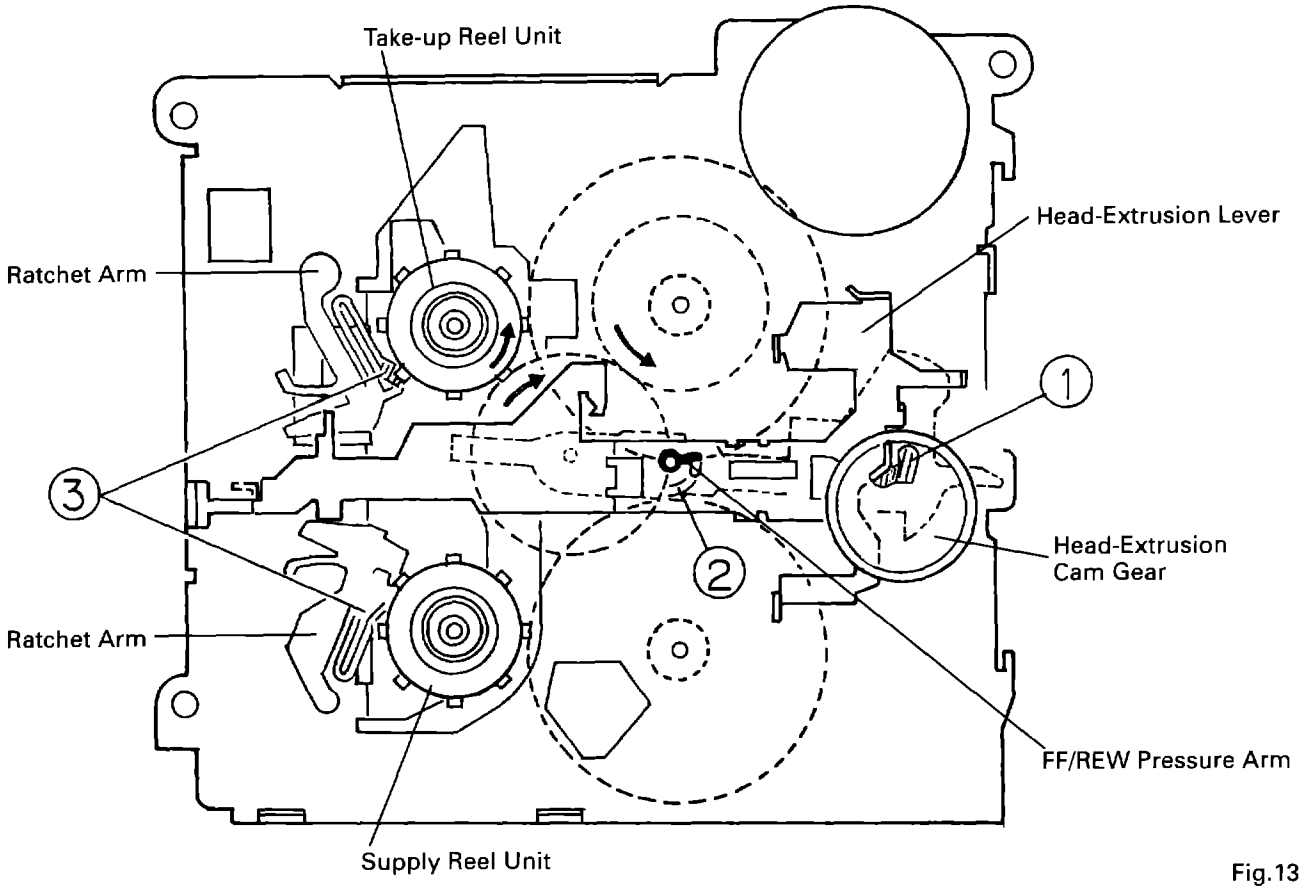


Fig.13

① The two-tier Head-Extrusion Cam Gear temporarily retains the Head-Extrusion Lever at the FF/REW position during Head extrusion.

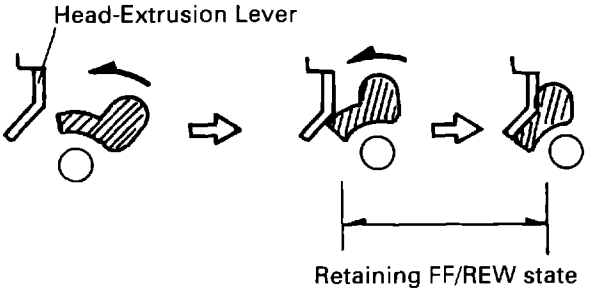
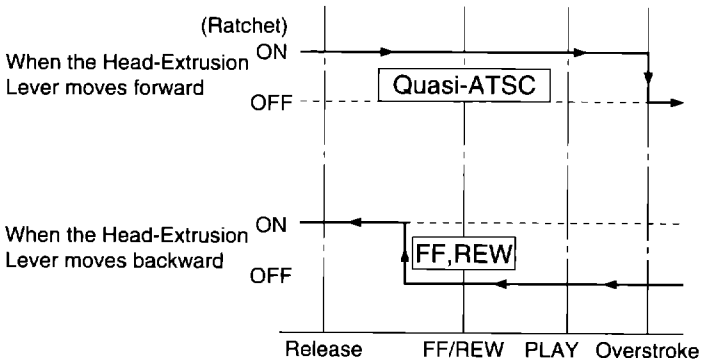


Fig.14

② At the FF/REW position, the Head-Extrusion Lever pushes the FF/REW Pressure Arm. This in turn sets the FF/REW Arm in the FF/REW mode, and the Reel Unit rotates in the rewinding direction at FF/REW speed.

③ At this point, the Ratchet Arm for NOR or REV mode is held at the Reel Lock position by the (a) locking boss. Therefore, the Supply Reel Unit stops, while only the Take-up Reel Unit rotates to remove any slack of a tape. This is Quasi-ATSC (Auto Tape Slack Cancellation).

Timing chart of the Ratchet Arms



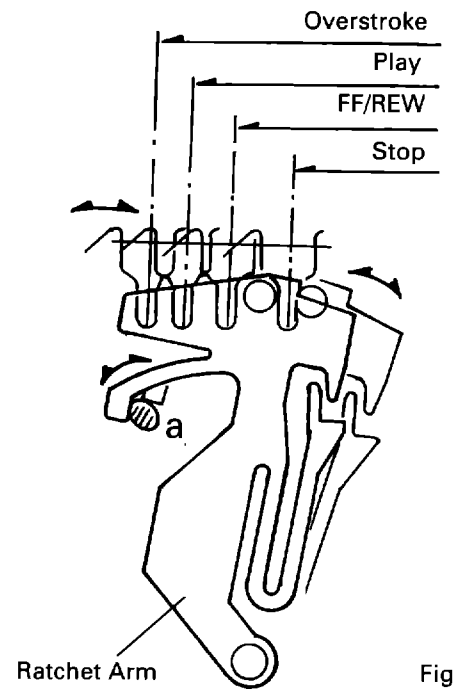


Fig.15

5.2 MS (MUSIC SEARCH) AND IGNITION-KEY-OFF RELEASE (EXK3435)

MS (Music Search) and Ignition-key-off (Key-off) release are performed according to the following procedures and mechanisms.

● **SOL Tip Adhesion Mode (PLAY, FF/REW):**
The SOL tip (a small iron plate) adheres to the body of the solenoid, while the two arms, Head-Extrusion Cam Gear Lock Arm and Head-Extrusion Lever Lock Arm, have freedom of movement.

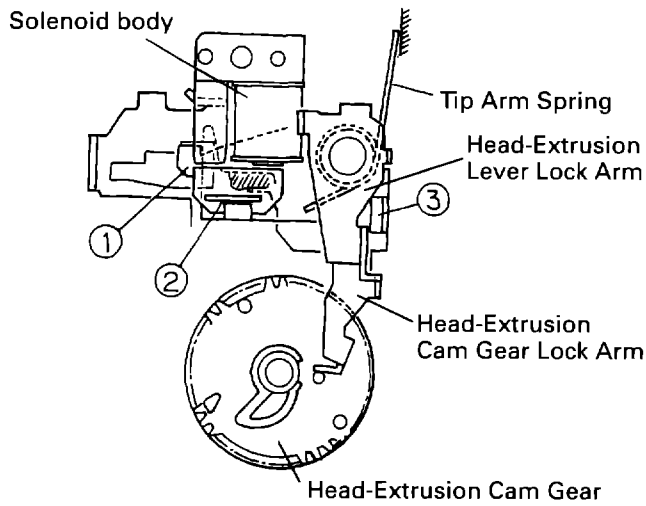


Fig.16

① The SOL tip and the body of the solenoid are in the adhesion state.
② There is no interference between the Head-Extrusion Lever Lock Arm and the Tip Arm.

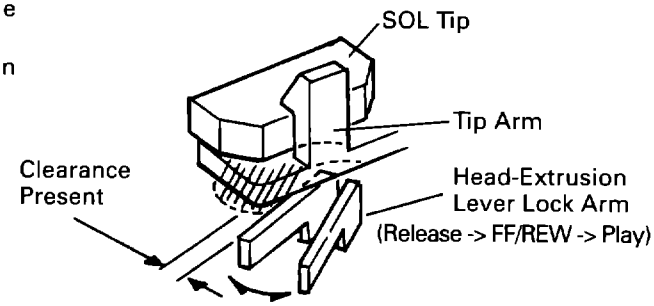


Fig.17

③ There is no interference between the Head-Extrusion Cam Gear Lock Arm and the Tip Arm.

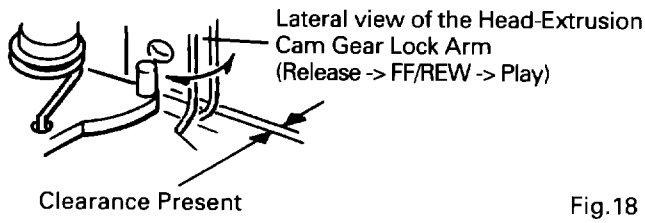


Fig.18

● **SOL Tip Release Mode (MS or Key-off Release):**
The Sol Tip is rotated counterclockwise by the Tip Arm Spring. The two arms, Head-Extrusion Cam Gear Lock Arm and Head-Extrusion Lever Lock Arm, are drawn in as follows:

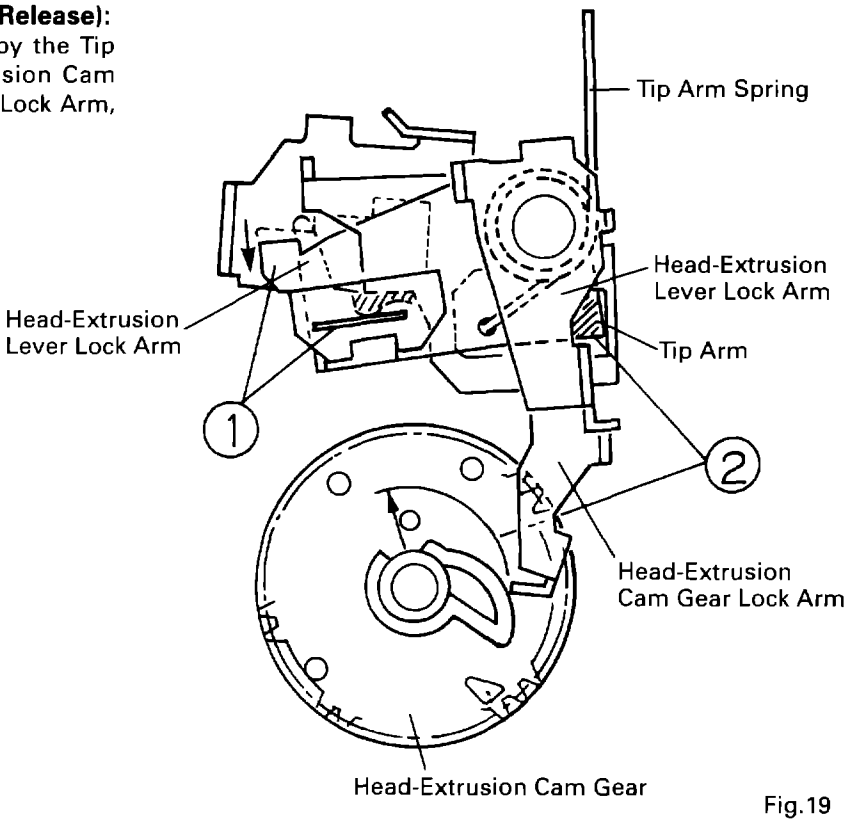


Fig.19

① The Head-Extrusion Lever Lock Arm is drawn to the release position by the Tip Arm. This motion releases the mechanism from the PLAY and FF/REW operations.

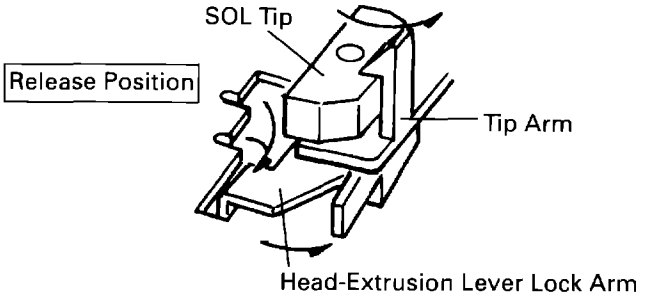


Fig.20

② The Head-Extrusion Cam Gear Lock Arm is released from the PLAY and FF/REW mode by the Tip Arm.

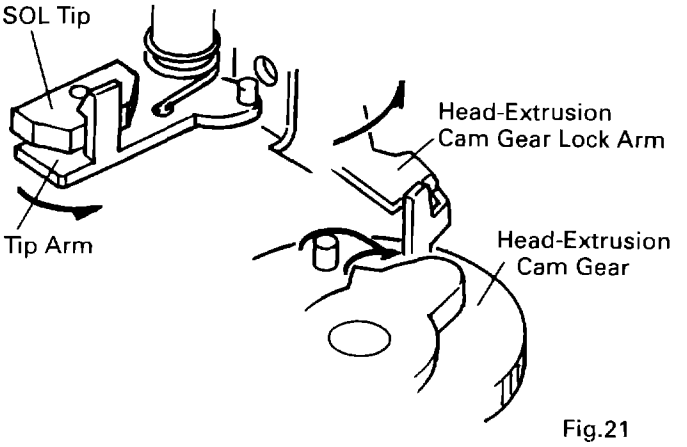


Fig.21

5.3 EJECTION AND HEAD RETRACTION

Ejection and head retraction are executed according to the following procedures and mechanisms.

● The Mesh of the Load Cam Gear

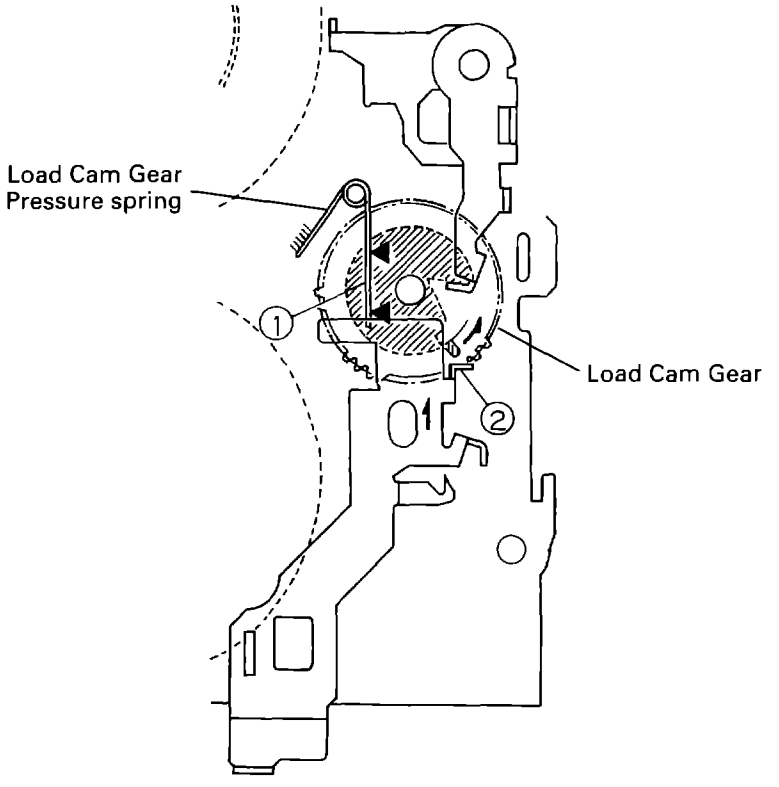


Fig.22

① During PLAY or FF/REW operation, the Load Cam Gear is retained at a certain position by the Load-Cam-Gear Pressure spring.

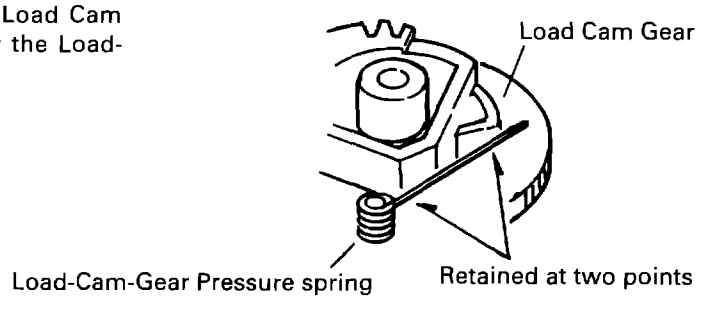


Fig.23

② With operation of the Eject Lever, the Load Cam Gear rotates counterclockwise and meshes with the Motion-Transmission Gear.

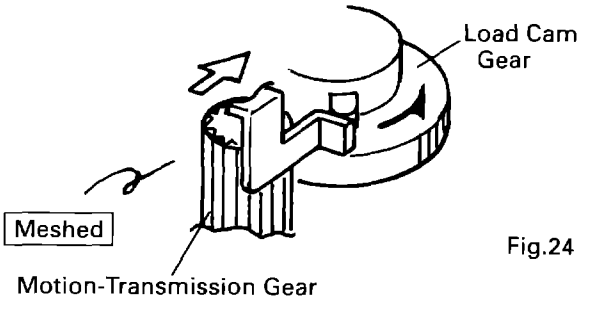


Fig.24

● A Chain of Movements of Load Cam Gear and Head-Extrusion Cam Gear for Ejection

(1) The Load Cam Gear starts rotating.

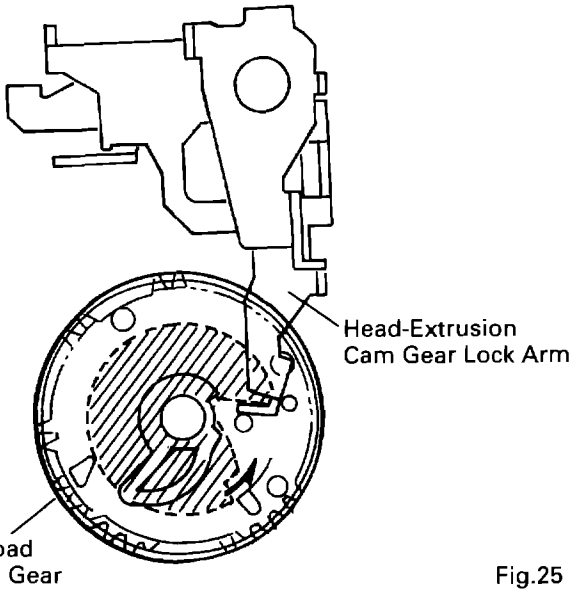


Fig.25

(2) The Head-Extrusion Cam Gear Lock Arm is released from the PLAY or FF/REW mode.

* The Head-Extrusion Cam Gear Lock Arm is in a free state (PLAY or FF/REW is possible.)

Fig.26

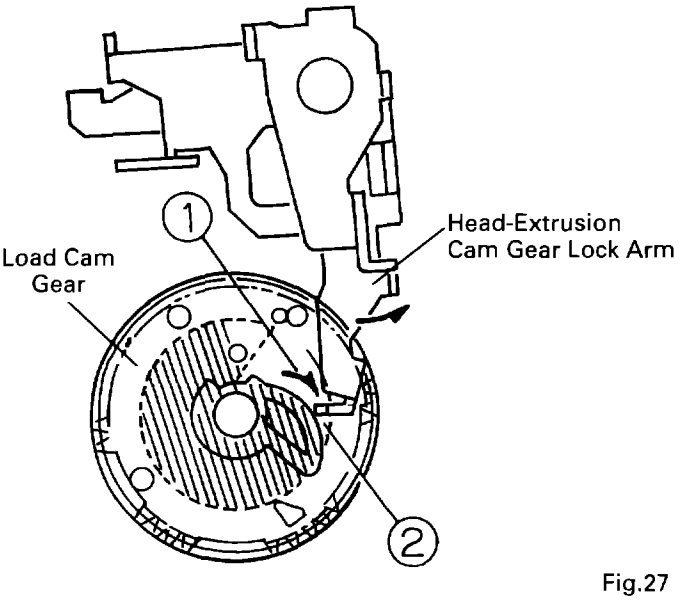


Fig.27

① The Head-Extrusion Cam Gear Lock Arm is drawn outside the PLAY or FF/REW lock area by the cam of the Load Cam Gear and the Head-Extrusion Cam Gear starts to rotate. (Fig.28)

② At this position, the Head-Extrusion Cam Gear Lock Arm locks the Load Cam Gear. (Fig. 29)

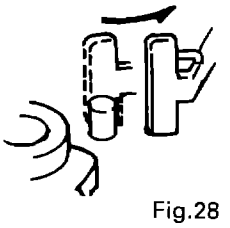


Fig.28

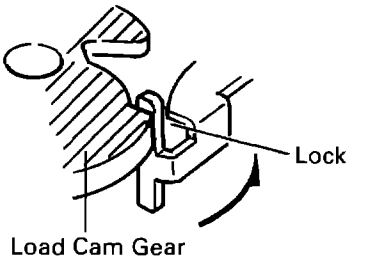


Fig.29

(3) Release of the Head-Extrusion Lever, lock of the Head-extrusion Cam Gear and resumption of Load Cam Gear rotation.

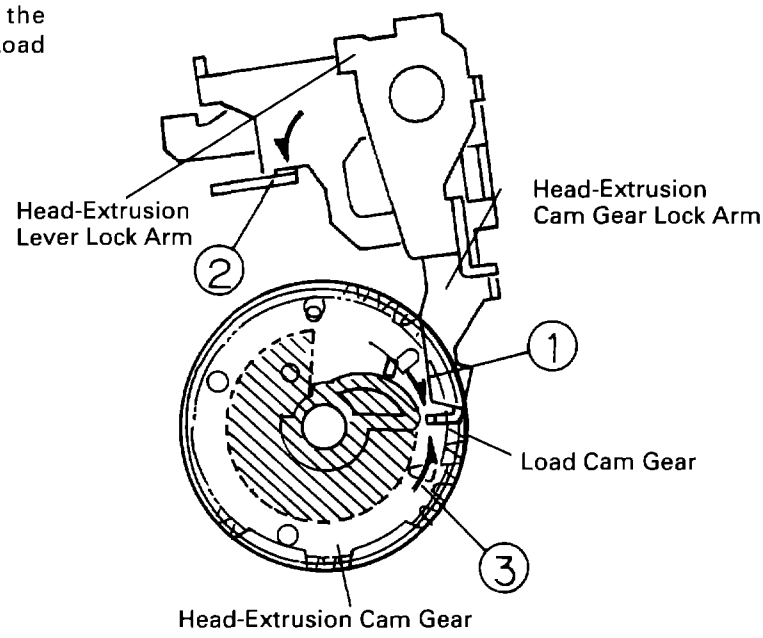


Fig.30

① The Head-Extrusion Cam Gear rotates to draw in the Head-Extrusion Cam Gear Lock Arm by a full stroke.
② The Head-Extrusion Cam Gear Lock Arm pushes the Head-Extrusion Lever Lock Arm to release the Head-Extrusion Lever.

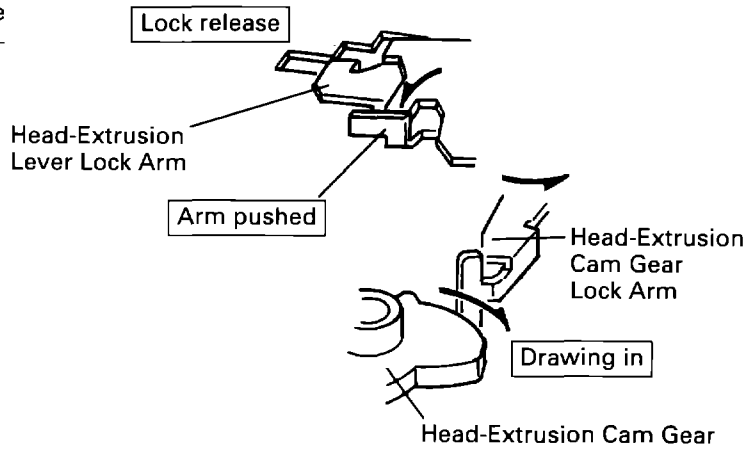


Fig.31

③ When the release of the Head-Extrusion Lever is completed, the Head-Extrusion Cam Gear Lock Arm unlocks the Load Cam Gear and makes it resume rotation for loading.
Also, the Head-Extrusion Cam Gear is retained at the release position with the Lock Cam.

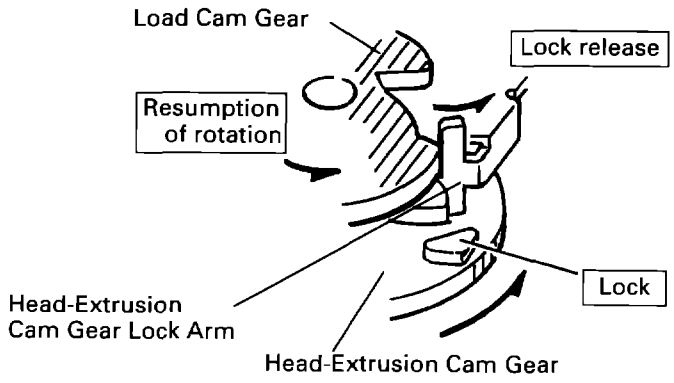


Fig.32

5.4 CASSETTE EJECTION

The movements of cassette ejection after head retraction are as follows.

① Sliding the Load Rack Lever and the Load Lever by rotation of the Load Cam Gear.
② Lifting up the Cassette Frame by sliding the Load Lever, and ejecting a cassette by the Draw-In Arm.
③ Turning off the LOAD Switch at the latter half of the Draw-In Arm rotation, and switching off the +B line by the microcomputer.

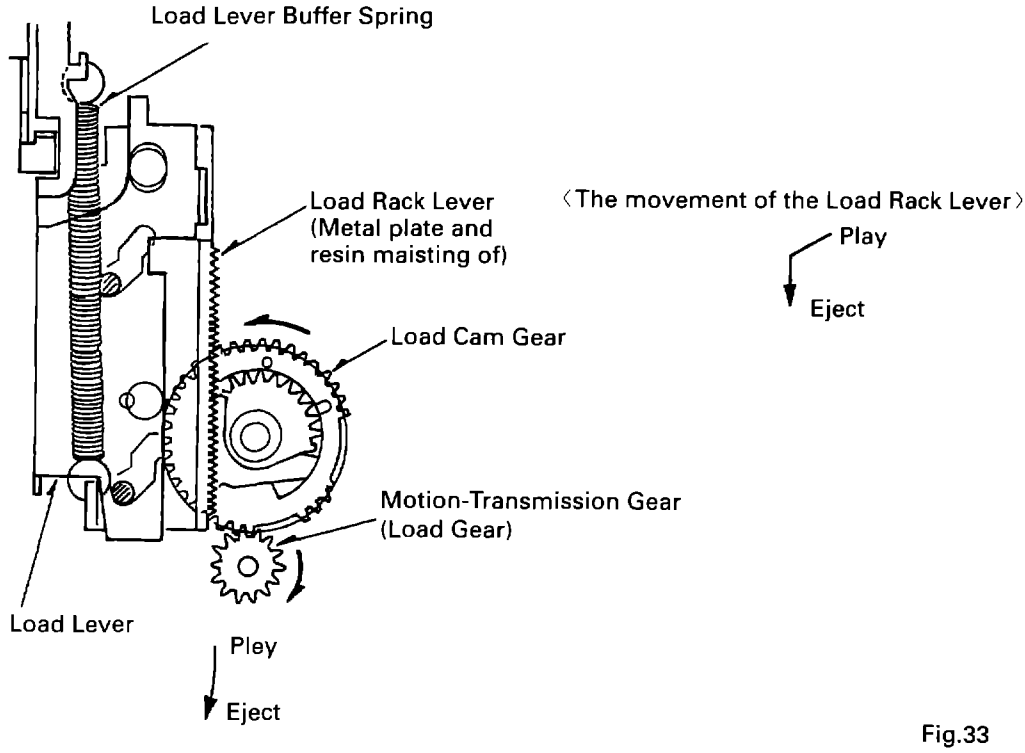


Fig.33

① After the Head is retracted and the Head-Extrusion Cam Gear Lock Arm is released in the preceding process, the Load Cam Gear is rotated by the Load Cam Gear Pressure Spring to mesh with the Motion-Transmission Gear. The Load Cam Gear rotates, and its small gear pushes down the Load Rack Lever as shown above. The Load Rack Lever pushes down the Load Lever via the Load Lever Buffer Spring. At this moment, the Load Rack Lever avoids the Motion-Transmission Gear by utilizing 2 sets of groove and boss of the Load Lever.

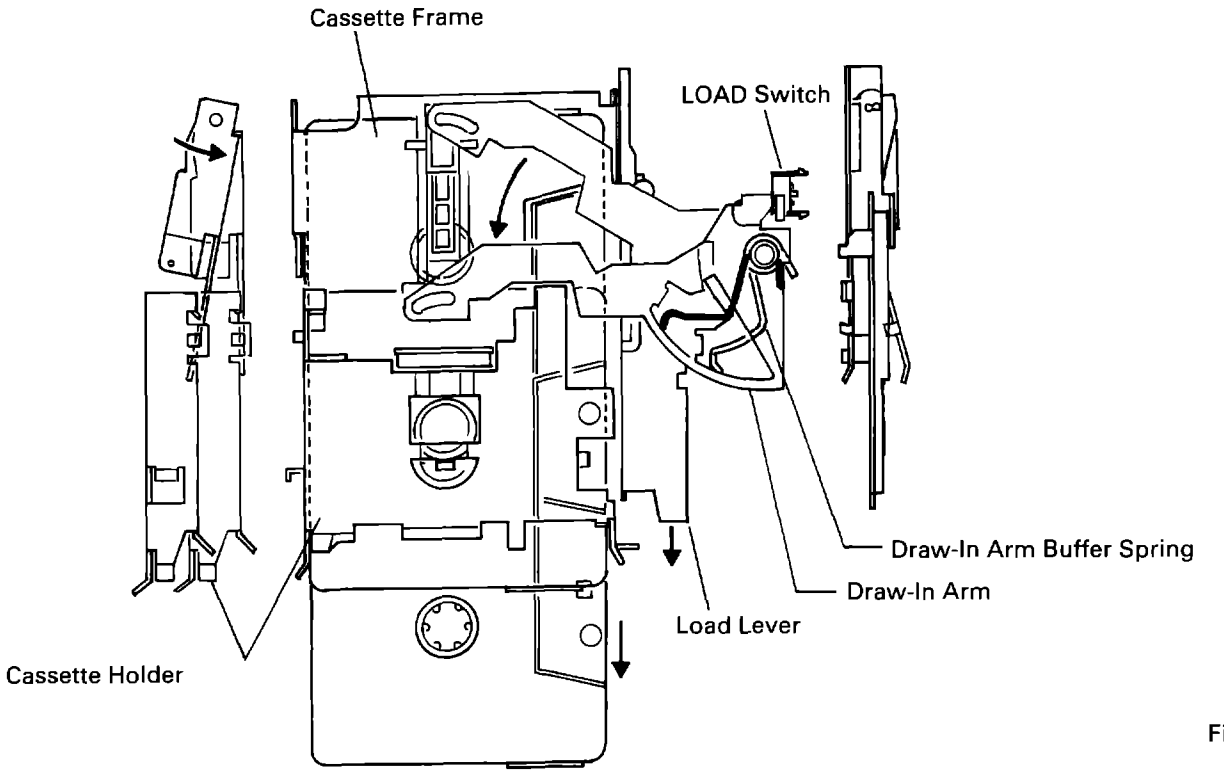


Fig.34

Operations of the Load Lever and Draw-In Arm

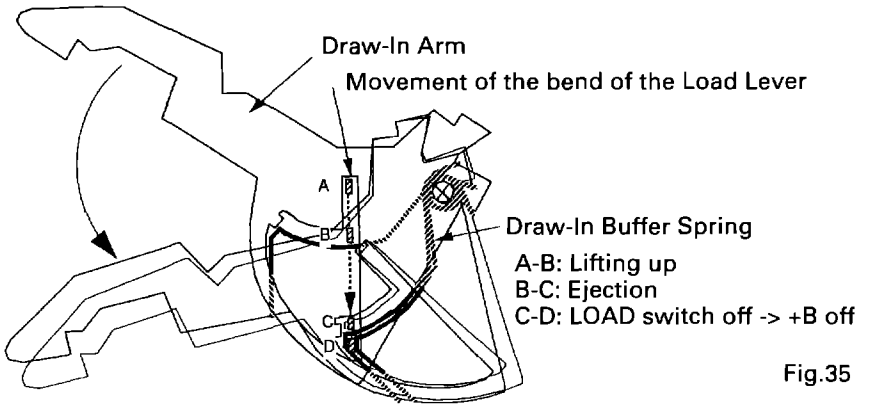
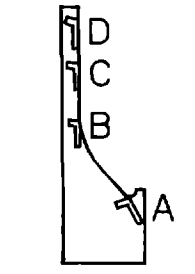


Fig.35

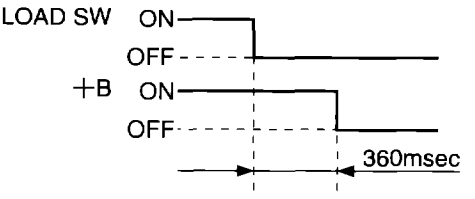


Detail of the Cam of the Load Lever

Fig.36

② In the figure 34, when the Load Lever slides downwards, the Cassette Frame is first raised with the cam part of the Load Lever (Fig. 36). And then, the bend of the Load Lever passes through the cam part consisting of the Draw-In Arm and the Draw-In Buffer Spring (Fig. 35). At this time, the Draw-In Arm Buffer Spring is pressed. It causes the Draw-In Arm to rotate and a cassette to be ejected.

③ Immediately before the completion of ejection by the Draw-In Arm, the LOAD Switch is turned off, and the +B line is also turned off 360msec later under microcomputer control. Then, the Draw-In Arm rotates further to complete ejection.



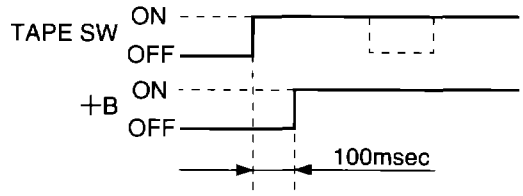
5.5 CASSETTE LOADING

The loading operations, from the cassette insertion to the setting to the PLAY position, are described below.

① Rotation of the Draw-In Arm by insertion of a cassette, and turning on the LOAD Switch.
② Rotation of the Load Cam Gear, sliding the Load Rack Lever and applying the +B line.
③ Drawing in and seating a cassette.

---

① The Draw-In Arm rotates upon insertion of a cassette, turning on the LOAD Switch. The microcomputer, after confirming it for 100msec, applies the +B line.



② When the +B line is applied, the Load Cam Gear leaves the rack section of the Load Rack Lever. Next, the Load Rack Lever meshes with the Motion-Transmission Gear to slide upward as shown in the figure 37. At this moment, rotation of the Load Cam Gear is stopped by the cam lobe of the Load Rack Lever, so that Head-extrusion is prevented.

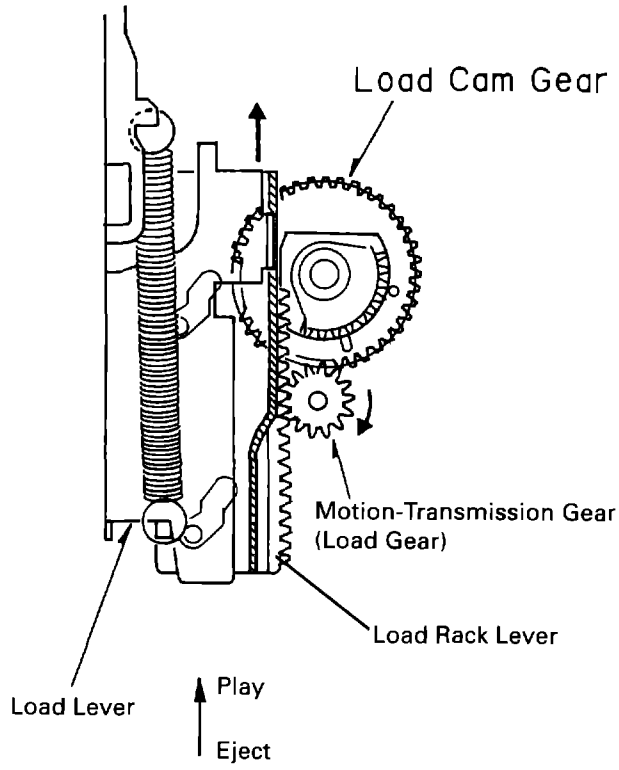


Fig.37

③ When the Load Lever slides, drawing in and seating a cassette is executed in the reverse procedure of Cassette Ejection (5.4-2). When the Load Lever reaches the Play position, the Load Cam Gear starts rotating for head extrusion.

5.6 TAPE-END DETECTION (SENSING)

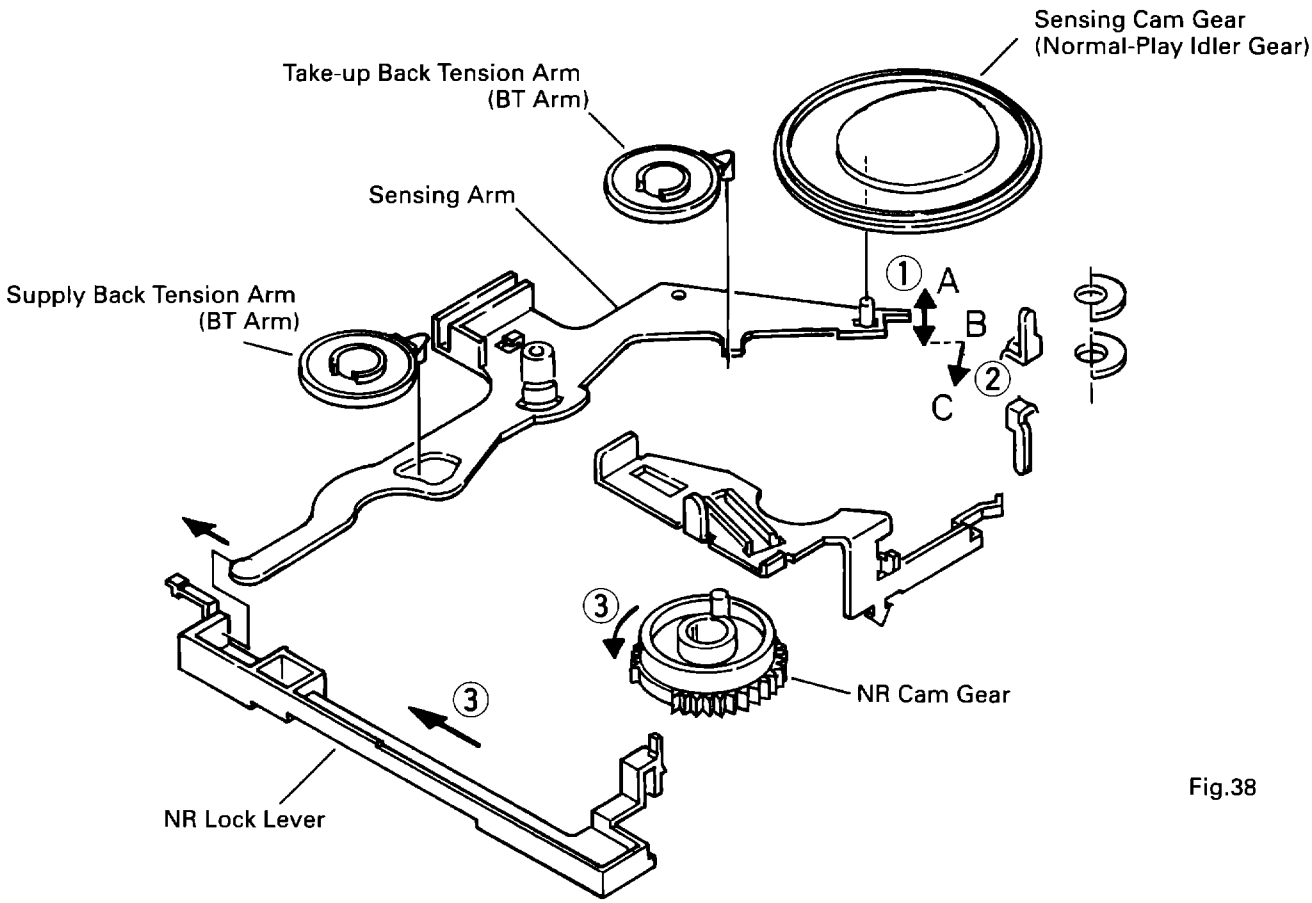


Fig.38

① **During tape running** .....The Sensing Arm is disturbed by the pull of the Back Tension Arm (BT Arm) for the Take-up Reel (Position A to B in Fig. 38).

② **Tape ends** .....The pull of the BT Arm disappears, and the Sensing Arm stops at the B position. The Sensing Arm is then drawn in to the C position by the triangle cam of the Sensing Cam Gear.

③ **Tape direction change** .....As the Sensing Arm is drawn in to C, the NR Lock Lever slides in the direction of an arrow. It unlocks the NR Cam Gear to start rotating it. Then, the tape running direction changes.

5.7 TAPE DIRECTION CHANGE

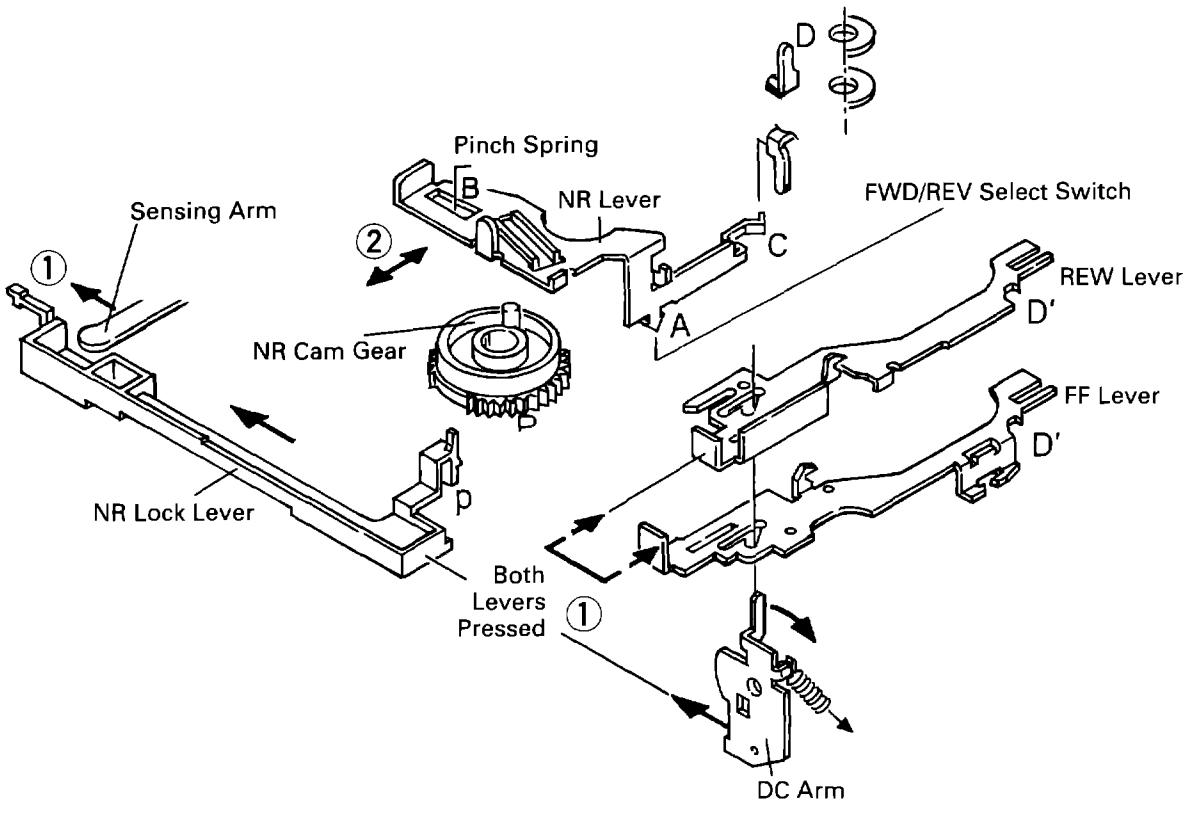


Fig.39

① Triggers for tape direction change

1. When the end of a tape is detected, the Sensing Arm induces the NR Lock Lever to slide as shown in Fig. 39 (Sensing operation).
2. When both the FF and REW Levers are pressed, the DC Arm rotates clockwise and the NR Lock Lever slides in the direction of an arrow (Manual DC operation). (See Fig. 39)

* The NR Cam Gear is locked by the pin of the NR Lock Lever after direction change is completed. Therefore, even if the FF and REW Levers are kept pressed, the NR Cam Gear no longer rotates for another DC operation.

② Tape direction change operation

The NR Lever slides as the NR Cam Gear rotates. The FWD/REV Select Switch and the Pinch Spring are also shifted by the movement of the NR Lever to change the direction.

1. Shifting the FWD/REV Select Switch
   The FWD/REV Select Switch is shifted by the SW Shifting Spring attached to the A section of the NR Lever. The NR Lever, which has overstroke over the switch, secures the motive force during Lock mode.

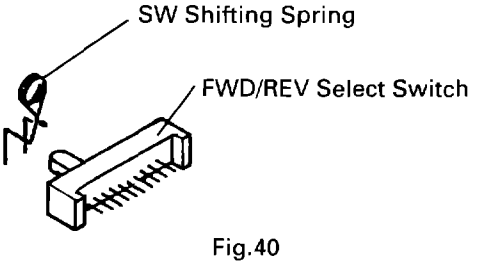
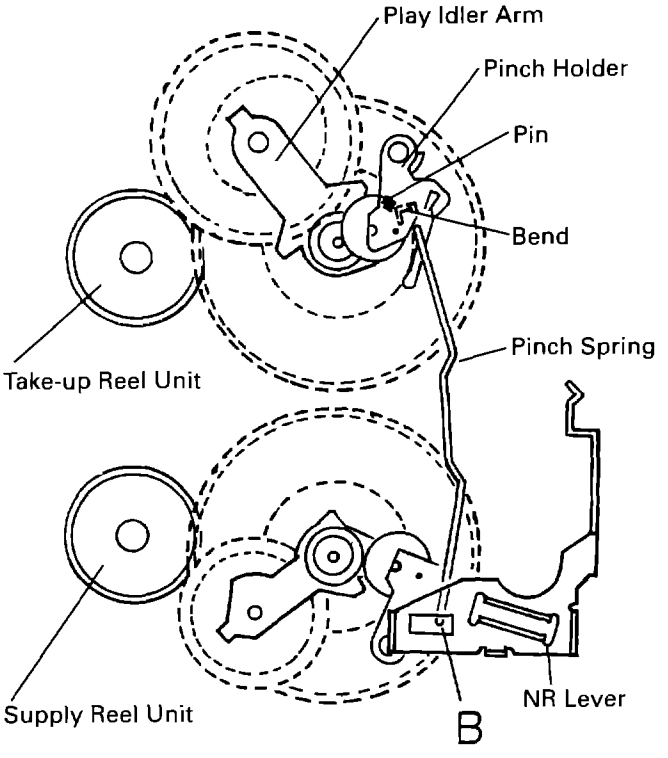


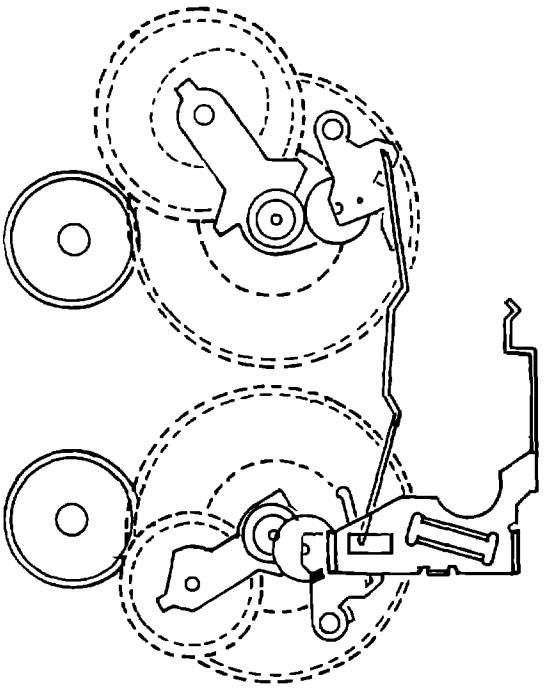
Fig.40

2. Shifting the Pinch Spring



Normal Play

Fig.41



Reverse Play

Fig.42

Sliding the NR Lever causes the Pinch Spring in the B hole to slide. The Pinch Spring moves the Pinch Holders alternately. In other words, when one Pinch Holder is pushed toward the Capstan, the other is forcibly retracted. The lower section of each Pinch Holder has a pin (marked with a black circle in the Fig. 41). So, when the Pinch Holder is retracted, its pin pushes the bend of the Play Idler Arm to keep the Idler Gear and the Reel Unit disengaged.

③ Auto Replay (FF/REW Tape-End Direction Change)

When a tape comes to its end in FF or REW mode, the Reel Unit stops to rotate and the NR Cam Gear rotates via the sensing motion. This rotation in turn induces the C section of the NR Lever to rotate the Head-Extrusion Cam Gear Lock Arm counterclockwise to release the lock at the D' sections of the FF and REW Levers. (See Fig. 39) At the same time, as it also releases the lock of the Head-Extrusion Cam Gear, the Head Base is put into the Play mode from the FF/REW position via the release position. When the tape reaches its end in the Play mode, the tape direction changes to perform reverse play operation.

5.8 FF/REW

Operation mode	Contents of operation
Play	During Play mode, each related part is set as shown below.
FF	When the FF Lever is operated, the Head-Extrusion Lever, is unlocked. At the same time, the Head-Extrusion Cam Gear Lock Arm rotates to lock the FF lever.
	When the Head Base recedes, The FF/REW Arm, given motive force by the FF/REW pressure spring to the FF side, is pressed to the FF side by the Head-Extrusion Lever Projection, causing FF rotation.

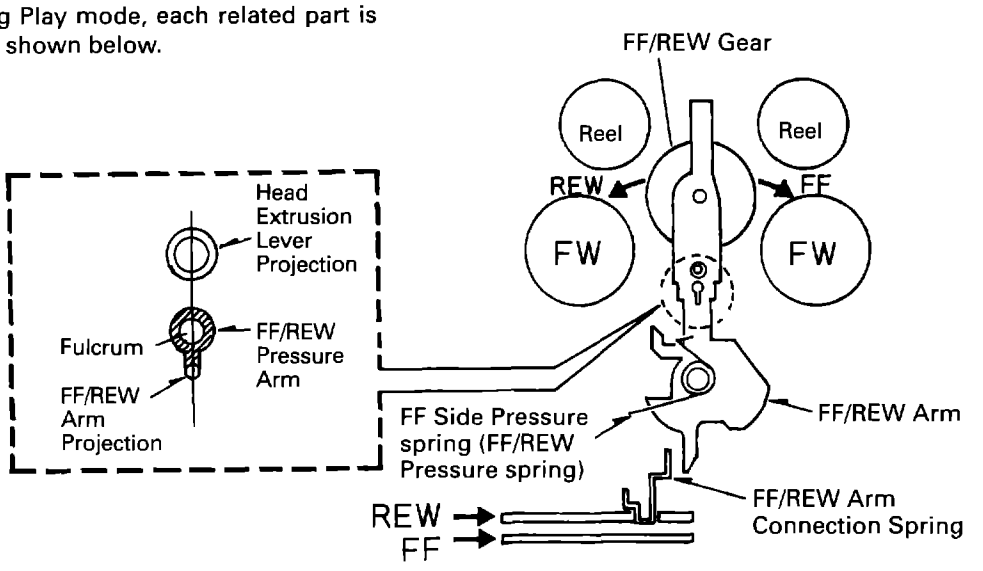


Fig.43

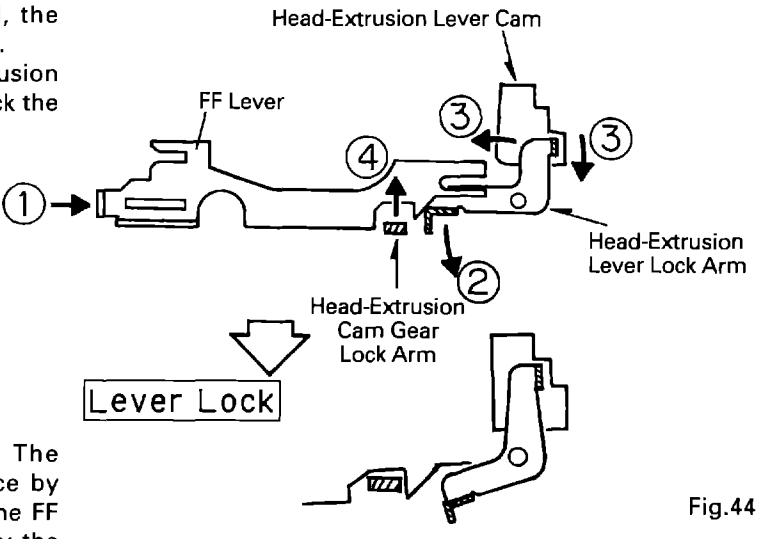


Fig.44

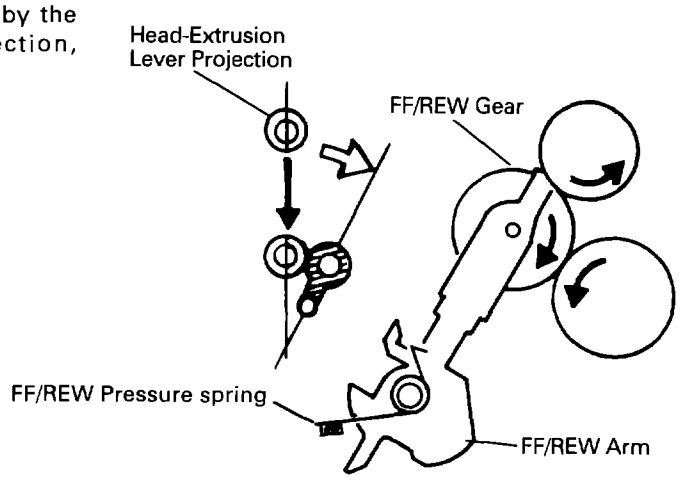
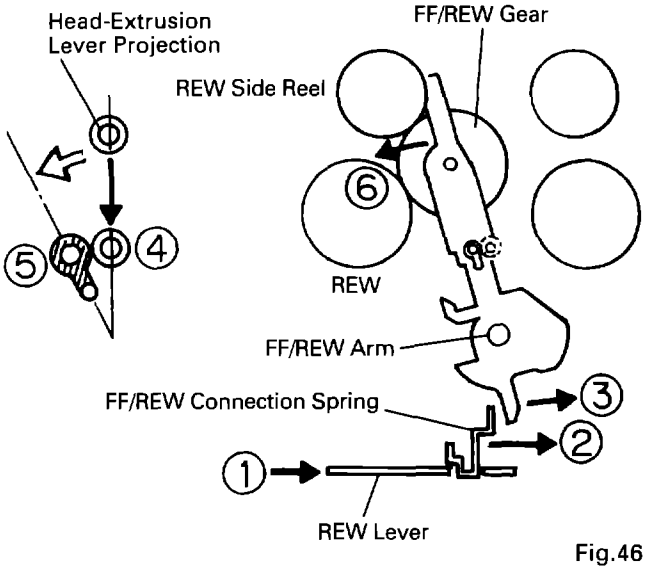
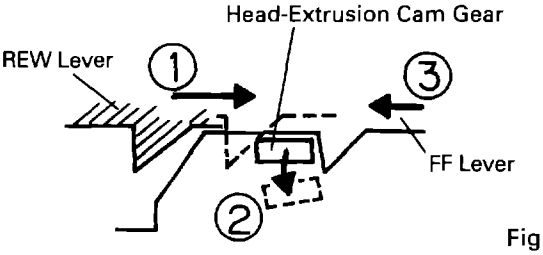


Fig.45

Operation mode	Contents of operation
REW	When the REW Lever is operated during Play mode, the REW Lever is locked using the same principle as in FF mode. The FF/REW Arm, via REW lever, FF/REW Connection spring and FF/REW Arm (①~③), draws in the FF/REW Arm to the REW side. At the same time, of the movement of Head-Extrusion Lever Projection (④) the FF/REW gear meshes with the REW Flywheel, causing REW rotation.(⑤,⑥)  Fig.46
FF ↓ Lock release	In order to release the FF Lever lock, the REW Lever is operated. The REW Lever rotates the Head-Extrusion Cam Gear Lock Arm, inducing the release of the FF Lever lock (①~③). Afterwards, the Head-Extrusion Cam Gear rotates to start Play mode. Caution: Direct change between FF and REW modes is not allowed.  Fig.47
REW ↓ Lock release	Operation of the FF Lever releases the REW Lever, causing Play mode to start. (Same as FF release)

● **FF/REW Block Diagram**

※The following figure shows FF mode.

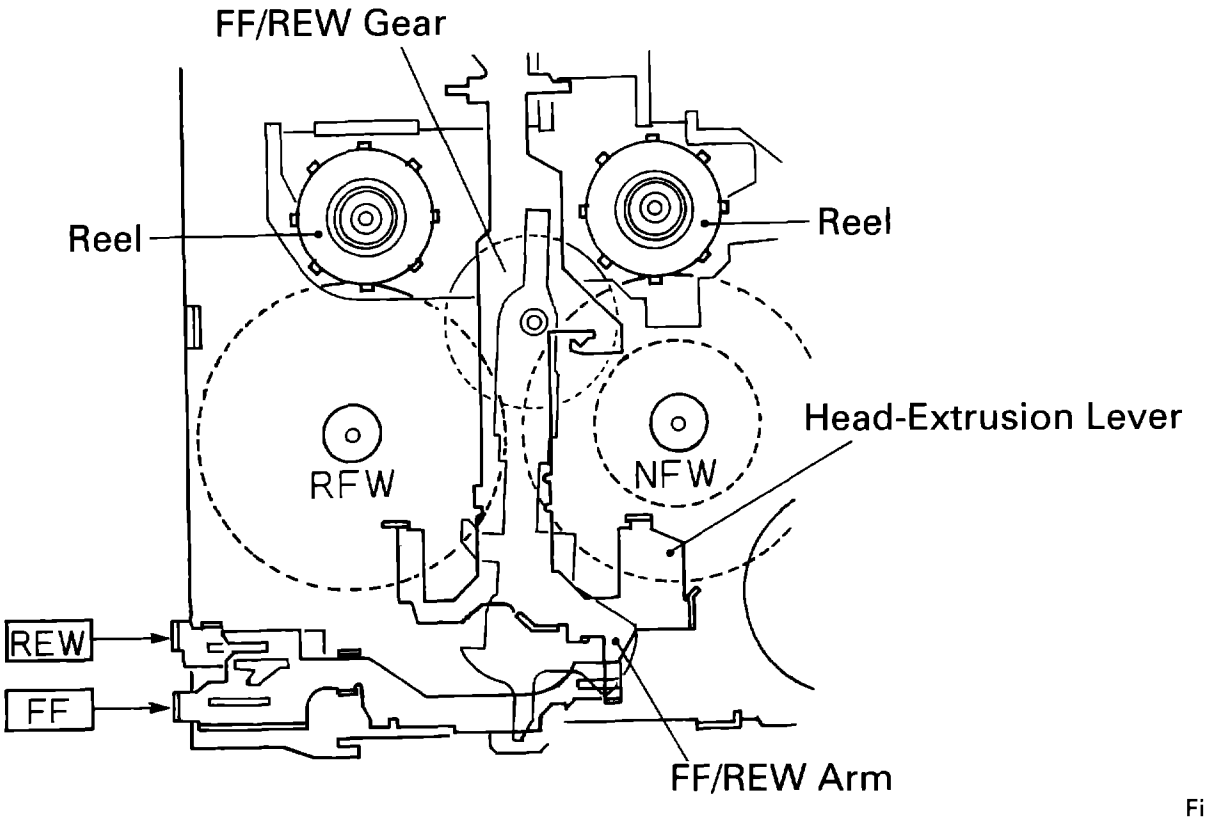


Fig.48

● **FF/REW Lever Lock Section**

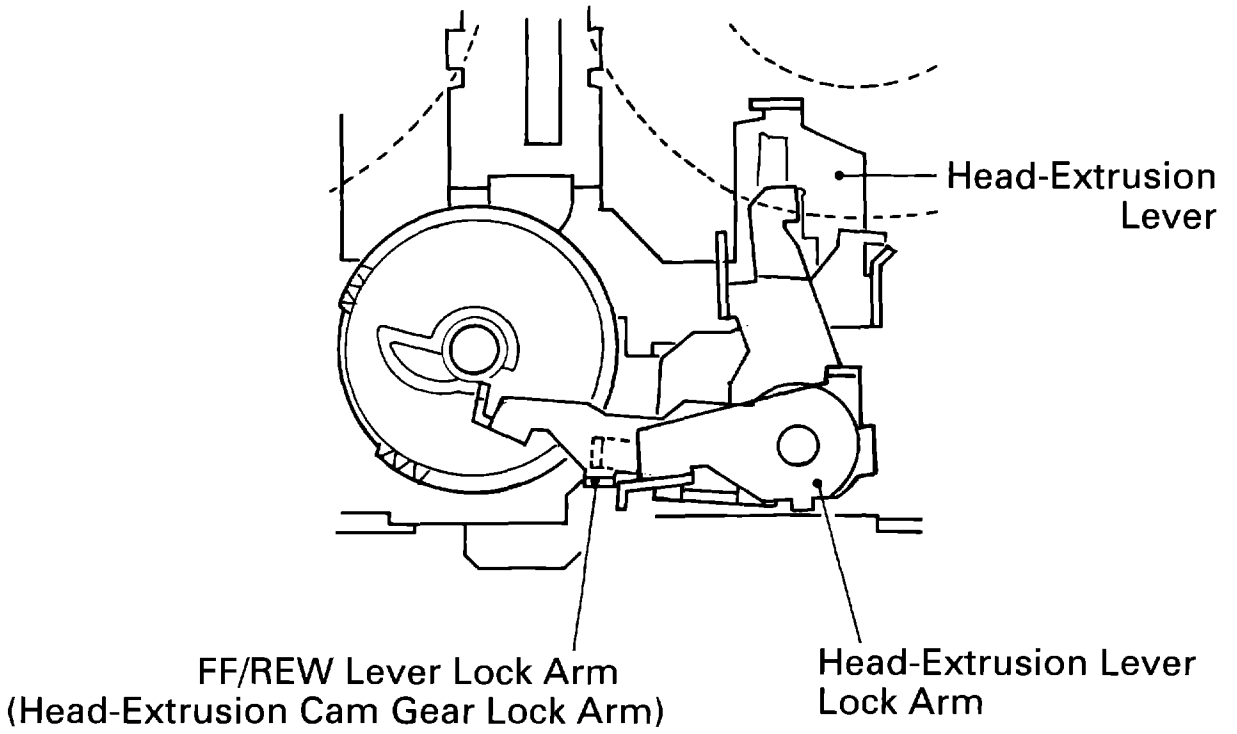


Fig.49

5.9 MUTE MECHANISM

The mute function is turned on by the following modes and operations.
1. Manual DC (Direction Change)
2. REW
3. FF
4. Head-Base release (key-off release)
5. Loading to Head-Base advance
6. Ejection

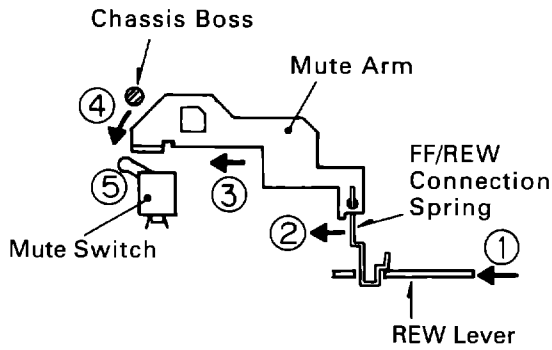
<table>
<tr><th>mode</th><th colspan="2">Operation and operation function</th></tr>
<tr><td>1.
Manual DC</td><td>When both of the FF and REW Levers are pressed, the Mute Switch is turned on in the following procedures:
REW Lever → FF/REW Connection Spring → Mute Arm hits the Chassis Boss and moves in the direction of the arrow ④. → Mute Switch is turned on.</td><td rowspan="2"><The rear side of the mechanism>
 

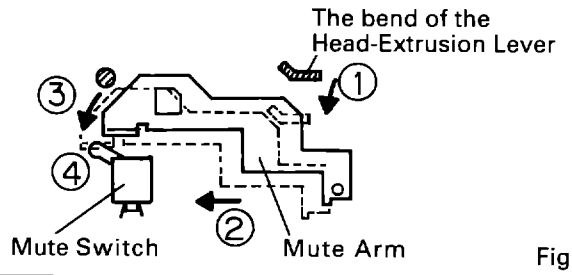
Fig.50</td></tr>
<tr><td>2.
REW</td><td>Same as manual DC.</td></tr>
<tr><td>3.
FF</td><td>FF operation causes the Head-Base to recede, and at the same time, the bend of the receding Head-Extrusion Lever moves the Mute Arm, which then turns the Mute Switch ON.</td><td> 

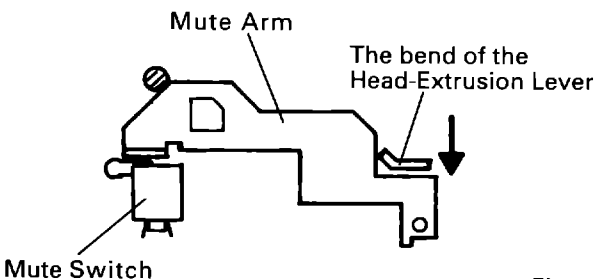
Fig.51</td></tr>
<tr><td>4.
Head Base Release (Key off Release)</td><td>As in the case of FF, the Mute Arm is pushed by the bend of the Head-Extrusion Lever to turn the Mute Switch ON.</td><td rowspan="2"> 

Fig.52
Note : When the Head-Base advances, Mute mode is turned off for an instant.</td></tr>
<tr><td>5.
Loading to Head-Base advance
6.
Ejection</td><td>As in the case of FF and Head-Base Release, the Mute Arm is pushed by the bend of the Head-Extrusion Lever to keep the Mute Switch on.</td></tr>
</table>

6. DISASSEMBLY

Replacement parts	Replacement and Disassembly procedure
1. Head	① Remove the Draw-In Arm (disengage the retainer pawl from the Head side). ② Remove the Cassette Holder (disengage the retainer pawl). Remove the Cassette Frame. Remove the Seating Buffer Spring (See "Tips for Assembly" for details.). ③ Unsolder the Cassette P.C. Board and remove the following. • Head Flexible Cable • Mute Switch • Lead Wire (for motor, solenoid) ④ Remove the P.C. Board screws. ⑤ Remove the P.C. Board. ⑥ Remove the Eject Lever Spring and the Ejection Lever (disengage the pawl). ⑦ Remove the FF/REW Lever Release Spring and the FF/REW Lever (disengage the pawl). ⑧ Remove the Load Lever Buffer Spring. ⑨ Remove the Load Lever. ⑩ Remove the Load Rack Lever Bracket. ⑪ Remove the Load Rack Lever. ⑫ Remove the Guide Bracket (disengage the retainer pawl from the motor side). See "Tips for Assembly" for installation of the Eject Cam Drive Spring for the Eject Cam Gear when assembling the Guide Bracket. ⑬ Remove the Pressure spring for the Load Cam Gear. ⑭ Remove the two screws of the Head. ⑮ Replace the Head. For assembly, reverse the disassembly procedures.

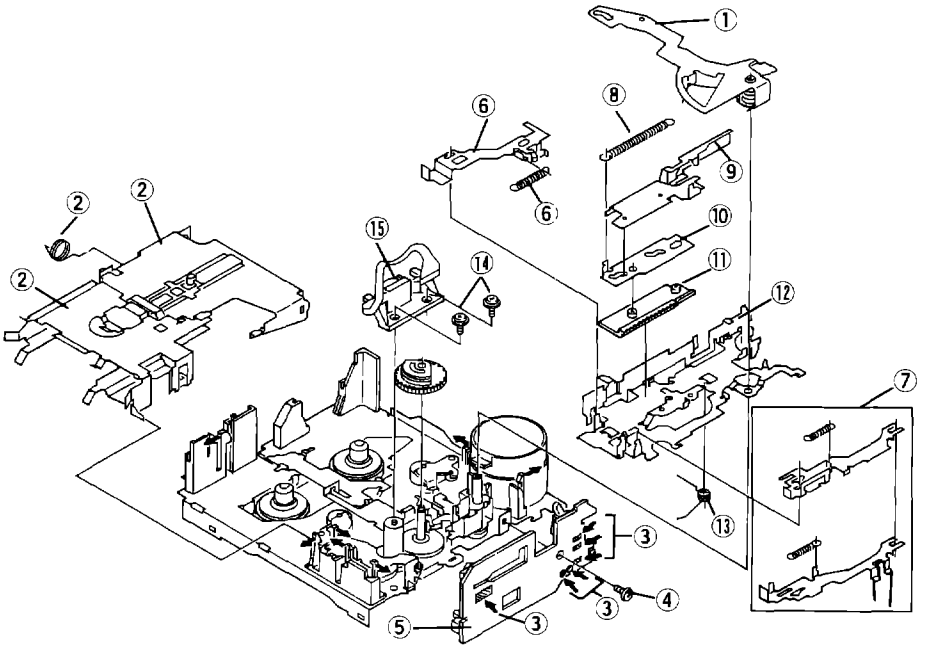


Fig.53

Caution : 1. Do not bend the chassis pawls beyond their allowable tension. They might become deformed.

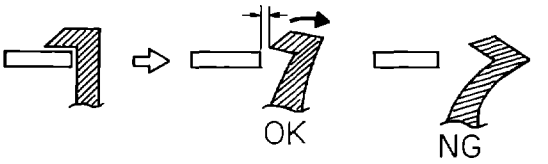


Fig.54

2. Make sure that the flexible cable of the replacement Head is securely bent. Special care should be taken when the flexible cable is positioned. (to prevent the flexible cable from touching the NR Cam Gear for DC).

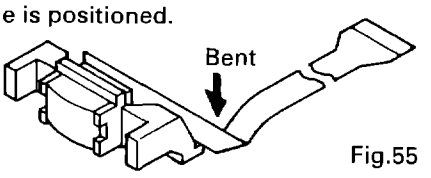
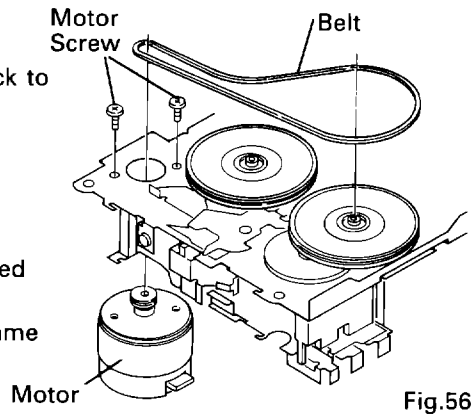
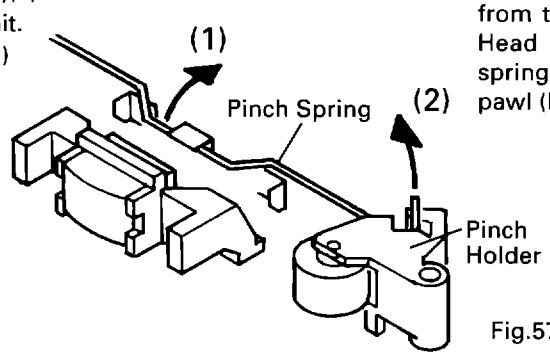
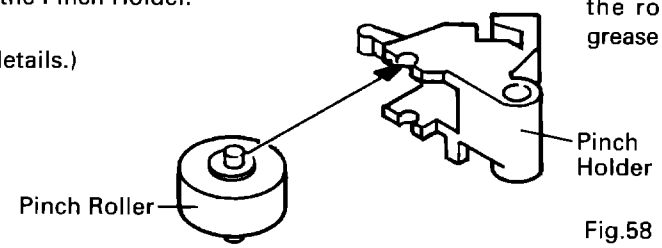
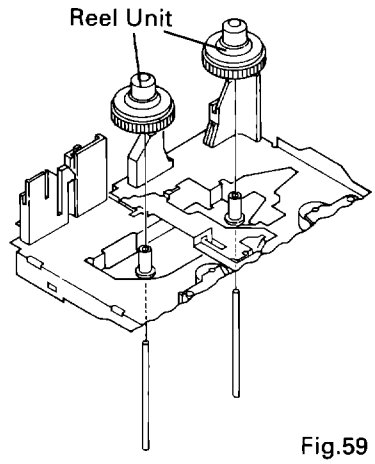


Fig.55

Replacement parts	Replacement and Disassembly procedure
2. Motor 3. Belt	① Unsolder the Motor lead. ② Flip the mechanism over. To avoid deformation, be cearful not to apply any schock to Cassette Holder and the Draw-In Arm. ③ Remove the Belt. ④ Remove the two Motor screws. ⑤ Remove the Motor. For assembly, reverse the above steps. Caution : 1. Use new Moter screws, because they are attached with adhesive. 2. The angle of Motor installation should be the same as the initial phase to reduce motor noises.  Fig.56
4. Pinch Holder	① Follow the same procedures 1to13 for Head replacement. ② Remove the Pinch Spring.(1),(2) ③ Remove the Pinch Holder unit. (disengage the retainer pawl) Unhook the Pinch Spring from the central bend of the Head Base, and remove the spring from the Pinch Holder pawl (N or R).  Fig.57
5. Pinch Roller	① Remove the Draw-In Arm and the Cassette Holder. ② Remove the Pinch Roller from the Pinch Holder. ③ Assemble a new Pinch Roller. (See "Tips for Assembly" for details.) Caution : After replacing the roller, apply grease to its shaft.  Fig.58
6. Reel Unit	① Remove the Draw-In Arm and the Cassette Holder. ② Insert a rod of about ϕ 2 mm into the Reel Unit fulcrum hole, and push it to remove the Reel Unit. Caution : When replacing the Reel Unit, apply grease to the retainer boss on the chassis.  Fig.59

7. CAUTIONS ON ASSEMBLY AND DISASSEMBLY

1. Do not bend the retainer pawls beyond their allowable tension. Or the pawls will become deformed, decreasing their ability to hold parts in place.
2. A lot of plastic parts are used for the chassis. Do not subject them to shock.
3. Do not push down the Cassette Holder in Eject mode. Or it will become deformed, because it has no buffer.

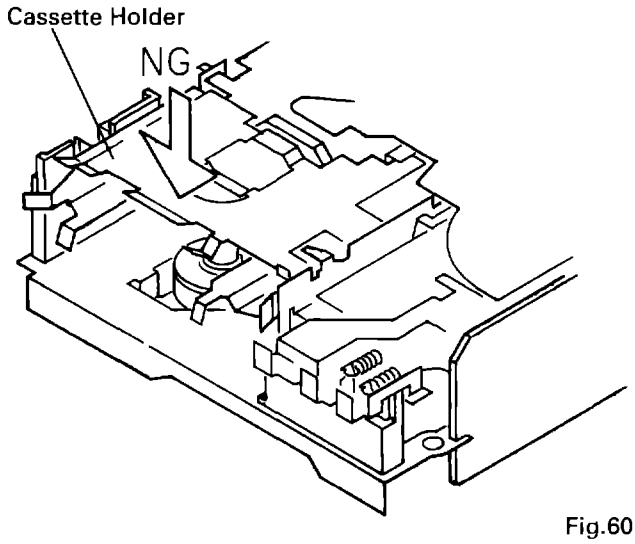


Fig.60

4. The Pressure spring for the Play Idler Arm is also used to ground the shaft holder to the chassis. Avoid any deformation of the spring.

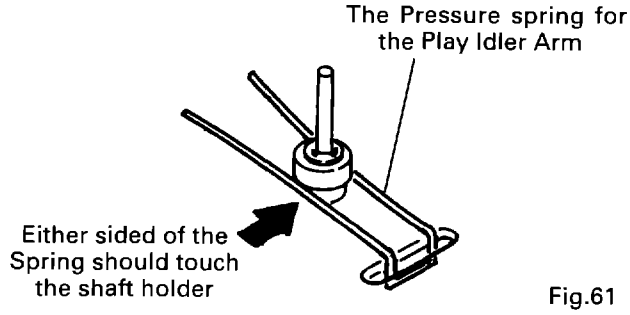


Fig.61

5. The rotation system is exposed, because there is no bottom cover. Handle the mechanism with care (to avoid deformation, loss of parts, damage)

8. TIPS FOR ASSEMBLY

● Removing/inserting the Frame Seating Spring from/into the Removable Block

< Removal >

* Set the Cassette Holder into the seating position.

Use a pair of tweezers or similar tools to grasp the Seating Spring and pull it out in the direction of the arrow.

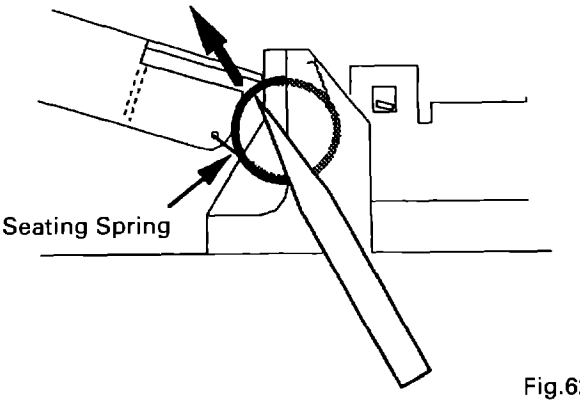


Fig.62

< Installation >

* Set the Cassette Holder into the seating position.

1. Hook the Seating Spring into the spring hole of the Cassette Holder.
2. Grasp the spring with the tweezers and push in the direction of the arrow.

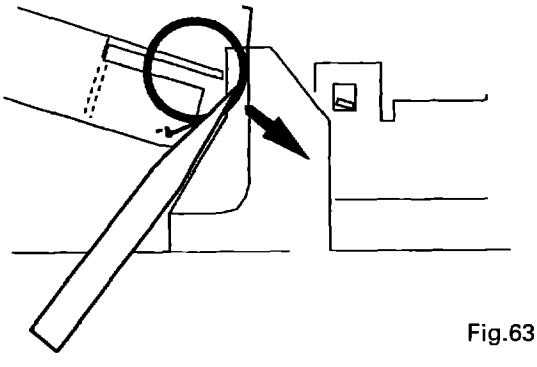


Fig.63

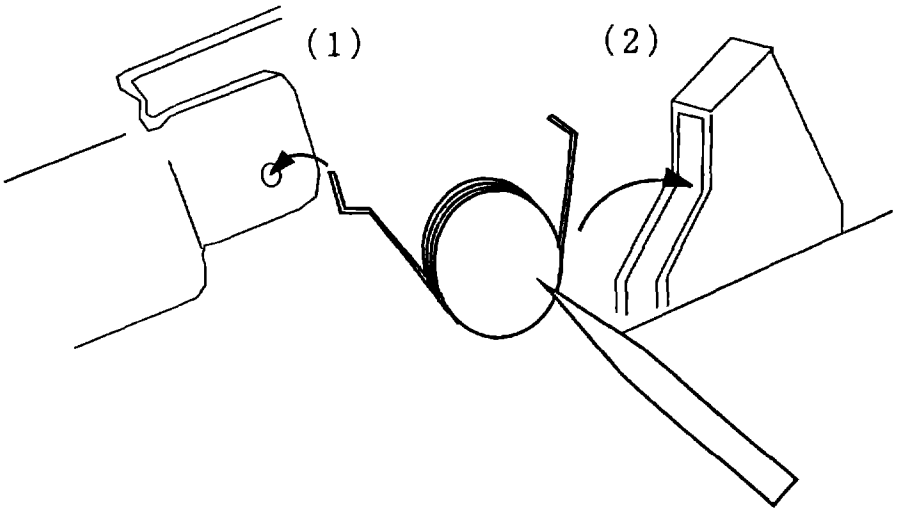


Fig.64

● Installing the Pressure Spring for the Load Cam Gear onto the Guide Bracket

The Pressure spring for the Load Cam Gear is installed on the rear of the Guide Bracket. When the Guide Bracket is removed for head replacement, this spring is also removed.
The Spring can be installed easily by the following method.

1. Hook the Pressure spring in sequence of (1), (2) and (3). In step (3), temporarily hook the spring on the Temporary Hook.

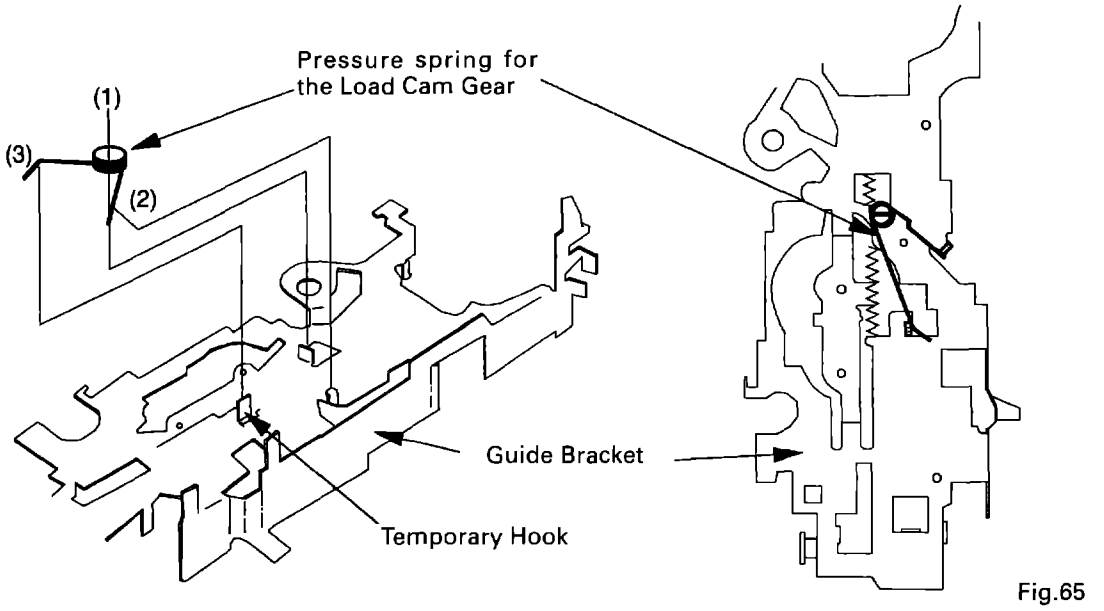


Fig.65

2. Install and fasten the Guide Bracket onto the Mechanism Chassis, then press the Pressure spring for the Load Cam Gear downward to release temporary hooking.

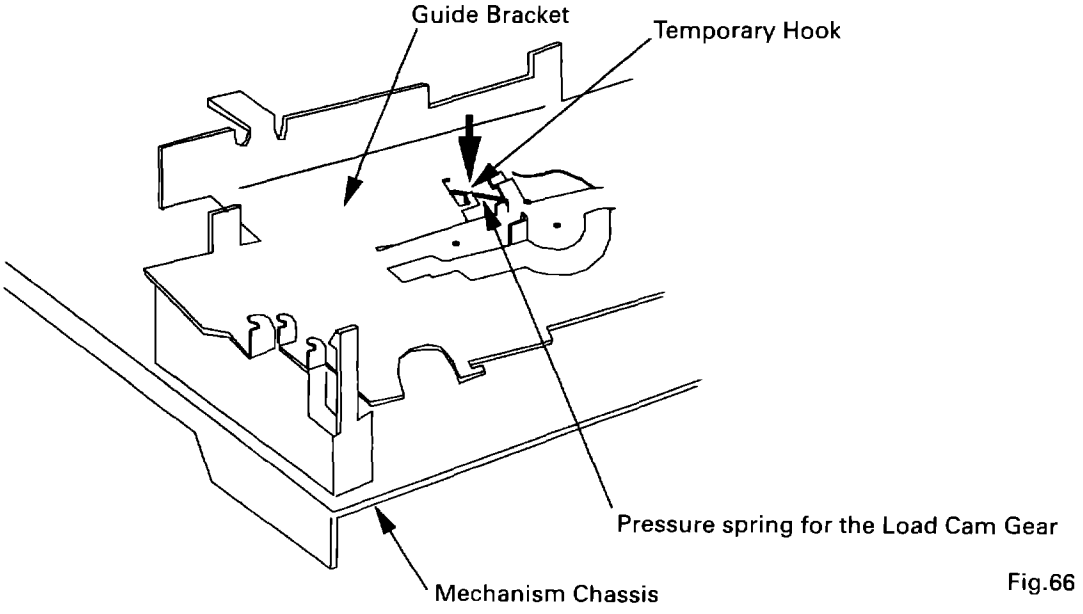


Fig.66

● Replacement of the Pinch Roller

The 2M mechanism uses snap-fit holders for the Pinch Roller. Should the rubber roller be found defective, it can be replaced easily without disassembling the mechanism.

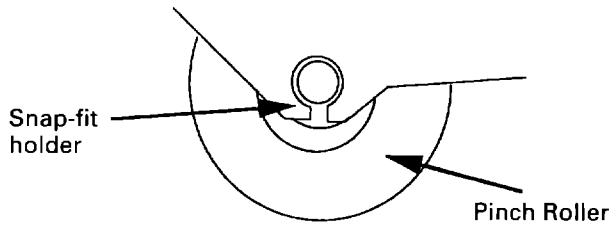


Fig.67

< Removal >

1. Set the Cassette Holder into the seating position.
2. Insert a pair of tweezers into the space through which the Pinch Roller is visible. Grasp the white plastic end of the roller shaft at the top of the Pinch Roller with the tweezers and pull it in the direction or the arrow. Remove the upper part of the roller shaft from the snap-fit holder.
3. Pull the rubber roller with the tweezers to remove the lower portion of the roller shaft from the snap-fit holders.

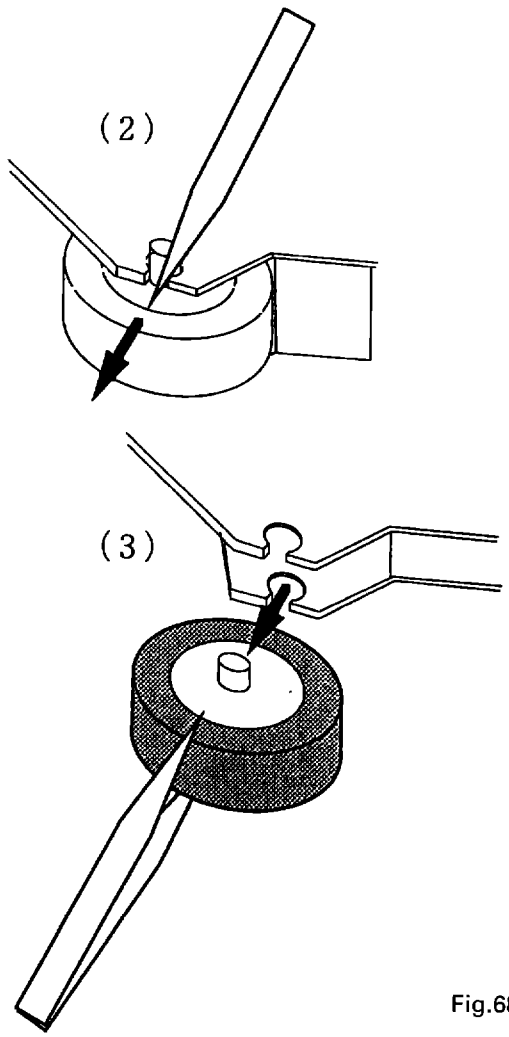


Fig.68

< Installation >

1. Position the cassette mechanism so that the head faces upward.
2. Place a new Pinch Roller on the top of the snap-fit holders.
3. Press the rubber roller with the tweezers to push the Pinch-Roller shaft into the shaft holders of the snap-fit system.

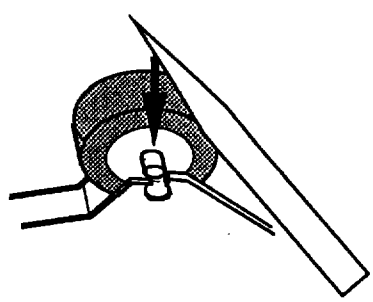


Fig.69

9. ADJUSTMENT

● Tape-speed adjustment

Adjust with a ceramic screwdriver.
Clockwise to increase ..... ⊕
Counterclockwise to decrease ..... ⊖
Adjustment value : 3030 Hz at normal start
Spec. : 3030 Hz ± 60 Hz (4.76 cm/s $^{+3}_{-1}$%)

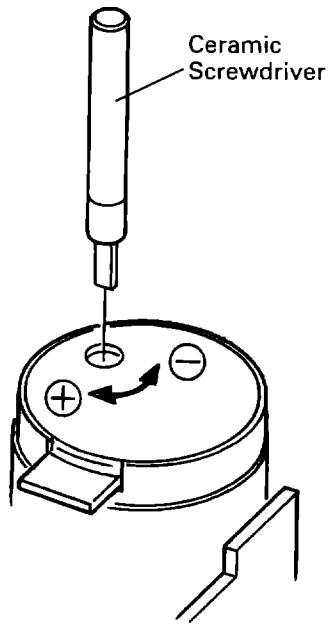


Fig.70